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NATURAL RESOURCES

October 1997 \$3.00



Tour the
Chippewa
Flowage

Practical grouse hunting tips

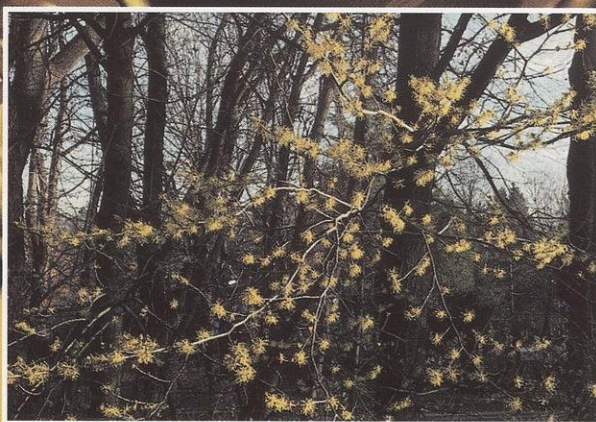
Fall migration

<http://www.wnrmag.com>

A charming fall bloomer

Witch hazel refreshes the fall landscape.

Katherine Esposito



KENNETH WOOD

At this moment, a small tree patiently waits along Indian Moccasin Trail at Natural Bridge State Park, biding its time until the sure signs of colder weather signal that its moment to shine has come.

The maples still gleam and the sumacs still glow. Most of the flowers have long since shriveled and fallen away. But common witch hazel, *Hamamelis virginiana*, is only now starting to bloom.

The large shrub is seen frequently in damp woods all over the eastern United States and west to southeastern Minnesota, and it doesn't get very big — only 15 feet or so. But it is unusual. From late September to November, after its leaves have dropped, spidery one-inch flowers will open, each with four slender, yellow petals. For a while, the witch hazel, in its own modest way, is the queen of the forest.

Its leaves have straight veins, with scalloped edges. Its twigs are covered by rough, brown hairs. Its forked branches were often used by settlers as divining rods.

When its seed capsules mature the following autumn, they burst with a pop, throwing seeds up to 50 feet in all directions.

Witch hazel's spidery yellow flowers brighten up a fall walk. The shrub makes a dandy landscaping plant as well.

In a different form, witch hazel has been present for more than a century in just about every pharmacy and barber shop in the United States, and beyond.

Up Indian Moccasin Trail, a sign close to a witch hazel tree offers a brief history lesson: how all parts of the tree have been used for medicinal reasons by Native Americans for ages; how it is still used by people today in a distilled form, as a skin toner. And there is a reprint of an advertisement from the 1890s from the Pond's Extract Company of New York and London, describing the virtues of its witch hazel "extract."

"The People's Remedy," Pond's called it. "For burns, scalds, bruises, sprains... lame back, frozen limbs... broken breast... rheumatism... bleeding piles... toothache... sore throat... bleeding lungs... sting of insects... hemorrhages."

Whether witch hazel extract cured a bleeding lung malady, we may never know. A century ago, Theron T. Pond was employing solid Yankee ingenuity, working with the Oneida Indians of Utica, New York to market one of their traditional remedies to the growing European population. They called it "Golden Treasure."

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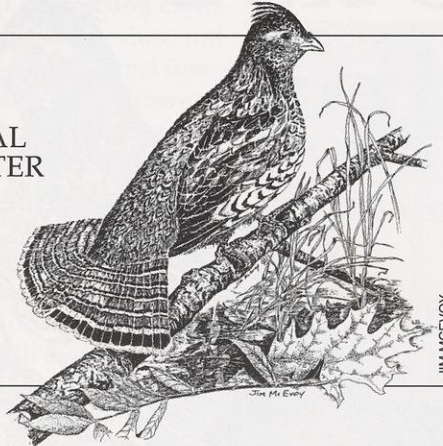
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Dave Crehore

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enjoy "chasing"
grouse.

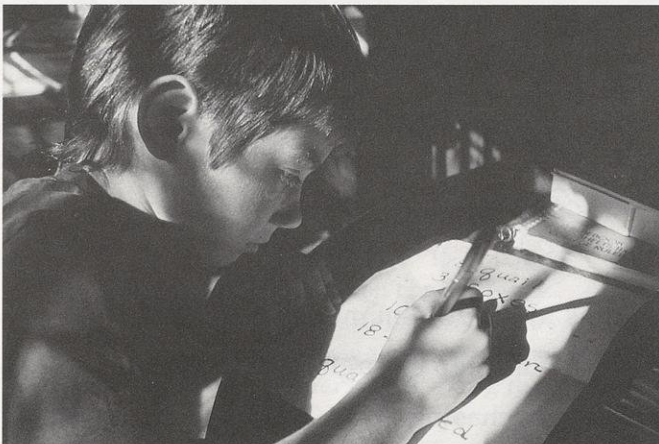


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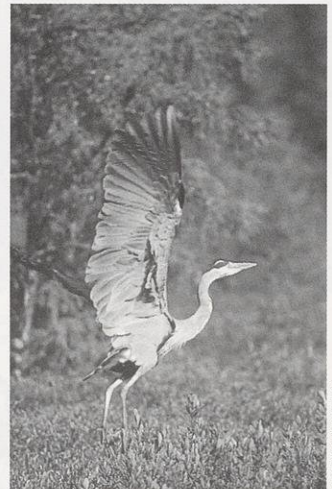


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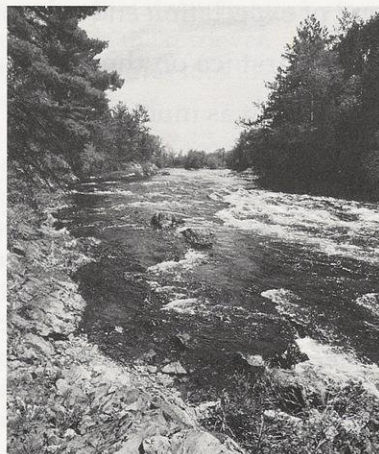
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A grand gift preserves a
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FRONT COVER: A ruffed grouse
announces its territory.

PAUL F. OSTRUM, Hayward, Wis.

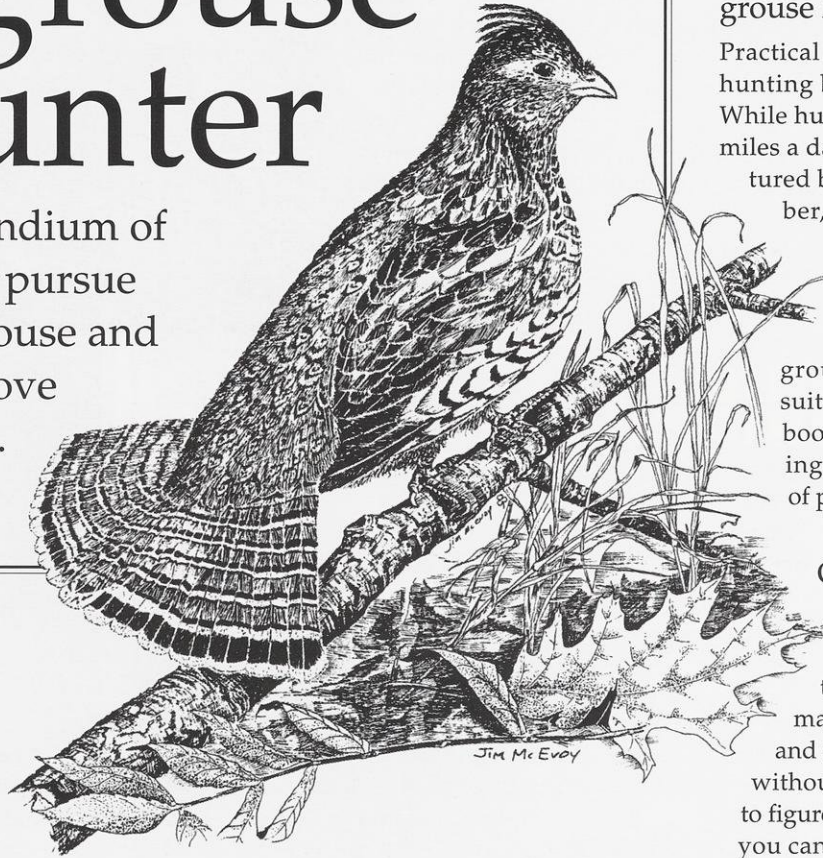
BACK COVER: The cedar swamp in
fall. For a map to the property, write
State Natural Areas ER/4, P.O. Box
7921, Madison, WI 53707

THOMAS A. MEYER, Mount Horeb, Wis.

The practical grouse hunter

A compendium of advice to pursue ruffed grouse and learn to love the chase.

Dave Crehore



Grouse hunting begins in the golden mornings of mid-September and lasts until the snow is deep enough to dust a bird dog's belly. ♦ Grouse hunters call it "chasing birds," but it's more than that. Grouse hunting is also a search for what remains of the old, wild Wisconsin. It's a blend of expectation and memory, of sights, sounds and smells as delicate as first ice on the creek, as loud as a short-barreled shotgun and as pungent as muck.

Wisconsin is probably the best place in the country to chase birds. It's in the heart of the country's grouse range, with huge areas of public land open to hunting. Best of all, the grouse season is more than three months long across most of the state.

Ruffed grouse (*Bonasa umbellus*) are native birds of the young forest. They weigh in at 1¾ pounds, are about 19

inches long from head to tail, and have a wingspan of 25 inches. Their broad, cupped wings power them to speeds of 35 to 50 miles per hour during their noisy escape flights. The trademark "ruff" is an impressive collar of feathers the male grouse erects around its neck during courtship displays.

If you don't hunt grouse, here's a primer on how to do it, drawn from

my four decades of experience. If you are a grouse hunter of long standing, read on anyway. You'll find plenty to agree and argue with.

Recognizing the practical grouse hunter

Practical grouse hunters aren't road-hunting bums or tweedy wannabes. While hunting, they walk a couple of miles a day, sweat a lot and get punctured by prickly ash. By late October, they are frayed, leg-weary and easily startled. Most of them can't afford first-class guns, dogs and gear, but that's no problem. All a grouse hunter really needs is a suitable shotgun, a good pair of boots, some blaze orange clothing, a sense of humor and a lot of practice.

Grouse hunting, condensed

Grouse hunting goes like this: You find a grouse woods, make sure it's OK to hunt in it, and then walk through it, with or without a partner or a dog. You try to figure out where the grouse are, so you can walk close enough to make them fly.

The exact moment of the flush will always be a surprise, and the roar of wings will scare the piedoodle out of you. Grouse twist, turn and accelerate as they fly through the trees; you have about two seconds to make sure no one is in the way, point your gun and get off a shot before the bird is out of range.

Grouse hunting burns more calories than it produces. To find grouse you have to keep pushing through dense woody cover, and if you flush a couple of birds per hour over the course of a day, you are doing fine. You'll barely be able to see some of the grouse you put up, and if you hit one out of four or five, rejoice. You've earned it.

There will be days — lots of days — when you don't get a bird. But grouse hunting isn't supposed to be easy, and

anyway, no one is keeping score. From time to time you'll encounter an apparently "tame" grouse trotting down a tote road or staring at you from the branches of a tree. You'll be tempted to shoot at it, but you won't. Grouse hunting builds character, and tests it, too. If you shoot sitting birds, you flunk.

Finding grouse habitat

You hunt grouse by hunting their habitat. Start with places like these:

- Thick, young, woody cover — aspen, alders, honeysuckles, dogwoods — within or adjoining older forest stands. If the walking is easy, you're in the wrong place. If there's flowing or standing water nearby, so much the better.
- Edges, where differing kinds of forest meet — young and old, deciduous and evergreen.
- Best of all, "jumbles," where water, openings, conifers and deciduous growth of assorted ages are all mixed up together.

Try the young, thick, damp places first, then move uphill to some of the others. When you flush a grouse, identify the trees, shrubs and herbs before you move on. Look for similar plant communities elsewhere, and you're likely to find more grouse. A practical

Male grouse erect a ruff of neck feathers during courtship.



RON TOEL

grouse hunter has to be a practical botanist, too.

Picking a grouse dog

After 40 years of experience with a variety of dogs, I've learned that a practical grouse dog earns his keep *after* the shot, not before it. His principal function is to fetch the downed bird, or help you make sure a bird isn't down. Most hunting breeds will learn to warn you by pointing or acting "birdy," when there is a live grouse nearby, and that's great. But fetching dead birds is still more important than finding live ones.

No matter what breed it is, a good grouse dog — one that understands grouse, retrieves reliably, works within 25 yards of you at all times, and warns you of an impending flush — is priceless. On the average, you get one of these per lifetime.

At first, hunt without a dog to develop some bird sense of your own. You may prefer going dogless; in fact, many good grouse hunters feel that going one-on-one with a grouse is the ultimate challenge. If you do decide to get a dog, don't be in a hurry. Try to hunt with various breeds, and talk to some dog owners and professional dog trainers. Pick a dog that suits your hunting style, temperament, checkbook, available spare time, habits and living quarters.

Finally, remember that if you hunt without a dog, you are the retriever. Expect to spend 15 minutes looking almost every time you shoot.

Ballistics and the brush factor

An angler can let the big one go, but there is no "shoot and release" in hunting. When you shoot at a grouse, there are only two acceptable outcomes: a clean miss, or a bird that tumbles to the ground stone dead. A grouse gun must be powerful enough to be humane.

Not that it takes a lot to bring down a grouse. Three solid hits with #7½ shot, or two solid hits with #6 pellets, will effect a clean kill. But, the clutter of twigs and branches between you and a flying grouse in heavy cover will soak up roughly 20 percent of the shot



JOHN KUBISIAK

Good grouse dogs of all breeds concentrate on retrieving. The great ones stay close, working with the hunter and signaling an impending flush.

pellets that leave the barrel, greatly reducing the effectiveness of any shotgun you use. That's the brush factor.

Sparing you the math, it boils down to this: To reliably and humanely kill grouse flying through thick cover, you must start with a load of at least one ounce of shot no smaller than #7½. As ranges increase late in the season, switch to an ounce or more of larger, heavier #6 shot.

Gun weight, balance and length

After a grouse flushes, you've got about two seconds to get off a shot, so your gun must be at the ready all the time, with your hands in shooting position and the muzzle at eye level. Carrying a heavy gun in this position all day is tiring, so a grouse gun's ideal weight is between 6¼ and 7¼ pounds, and the closer to 6¼ the better.

A grouse gun should have about half its weight between the shooter's hands, with the other half more or less

evenly divided between the barrels and stock. The balance point of a gun should be right at the knuckle or trunnions on which the barrels turn; repeaters should balance at the breech, or at most an inch ahead of it.

A relatively short gun is easier to carry in the ready position as you weave through the popples. I recommend a maximum overall length of 45 to 46 inches, approximately the length of a double-barreled gun with 28" barrels or a repeater with a 26" tube.

The 20-gauge shotgun meets the grouse hunter's needs perfectly. It's ballistically sufficient, yet light and trim enough to be an easy carry. For reasons of balance, weight and speed, a 20-gauge over-under is the best gun overall, followed closely by a 20 pump, with autoloaders coming in third. Of course, there's nothing wrong with a lightweight 12-gauge, if that's what you have. Early in the season, use skeet and improved cylinder chokes in either the 12 or 20; later, use improved cylinder and modified chokes.

How about the "little guns" — the 28-gauge and .410 bore? When used in grouse woods, I think the 28 is a crippler. It is simply inhumane to fire the 28's petite 3/4-ounce shot charge at ruffed grouse in heavy cover; too often, only one pellet gets through to the bird when two or three are necessary. And as for the piddly little .410 bore — hell's fiery pit awaits hunters who peck away at ruffed grouse with the .410's unpredictable patterns and miserable 1 1/16-ounce of shot.

How to shoot a grouse

Grouse are hard to hit because they almost always surprise you, because they are in range for only a couple of seconds, and because a shotgun doesn't point as naturally as your finger. You can't do much about the first two problems, so to improve your grouse shooting, you have to make the shotgun an extension of your pointing instinct. Some practical suggestions:

Focus: While hunting, keep your eyes focused on the middle distance. When a bird gets up, watch it, not the gun. Use your unfocused, almost sub-

liminal view of the barrel as a pointing aid while you devote 98 percent of your attention to the bird.

Gently, gently: Bring the gun to your face, not your face to the gun. When you mount your shotgun to shoot, push it slightly forward, track the moving target with the muzzle, and then bring the stock gently up to your face and shoulder just before you shoot.

Get fit: A shotgun "fits" fairly well when you bring it to your shoulder and find that the eye on that side is above the centerline of the gun, with the barrel's top rib appearing level and on the same plane as the eye. The gun will then shoot where you look. If the rib seems to be slanting uphill, the top of the stock is lifting your shooting eye too high and the gun will shoot high. If the stock is too low, you won't see the rib at all and your gun will shoot low. It's OK if a grouse gun shoots a little high, but a low-shooting gun is a disaster. A low stock can be built up with stick-on rubber pads.

Be ready: In the field, carry your gun with its muzzle at eye level and hold the stock against your right rib cage with your right forearm (or vice-versa for left-handers). The barrels should be angled out about 45 degrees from the front of your body, and at a 45 degree upward angle.

Be binocular: If possible, learn to shoot with both eyes open. To find out if you can be a "two-eyed" shooter, make a half-inch circle with your thumb and forefinger. With both eyes open, concentrate on a small object about 20 yards away. Keeping both eyes open, extend your arm to its full length and center the object in the circle. Now move your hand slowly back to your face, keeping both eyes open and the object centered in the circle. The eye that the circle naturally comes to is your dominant eye, the one your brain uses to point at things.

If your dominant eye is on the same side as your shooting shoulder, you're in luck. Two-eyed shooting should be fairly easy for you. But if you shoot from the right shoulder and have a left dominant eye, you'll have to learn to close your left eye as you mount the gun, letting your right eye do all the work — and vice-versa for left-handers.

Follow the leader: If you are right-handed, your left hand grips the fore-



From birth through their adult life, ruffed grouse blend exquisitely into their surroundings.

HERBERT LANGE

stock of the gun, and is called the "leading hand." When a grouse flushes, you'll hear it before you see it. Your body will instinctively turn toward the sound and, when you see the bird, your leading hand will point the gun near it, usually just behind it. As you move the gun to the bird, the stock will come up to your shoulder almost automatically.

Swing through: A moving target must be shot with a moving gun. Once you've learned to mount the gun smoothly, instinct will bring it up right behind the bird. Swing through the bird, fire when the gun passes it, and keep swinging along the bird's projected line of flight. Keep your cheek firmly on the stock until well after the shot is fired.

This "swing-through" method gets the gun moving faster than the bird. Your eyes and hearing find the bird in the air, your instinct points the gun just behind it, and your conscious mind sweeps the gun through the bird to fire at the place where it is going to be a



TRACEY TEODECKI (INSET) STEPHEN J. LANG

Home for a grouse is a mixed thicket of young aspen and alder near water, or conifers and deciduous trees. The brush is dense and the birds flush close and quick — a superb sporting challenge you can experience many times through the long fall hunting season.

fraction of a second later. Don't worry about how far you have to "lead" the bird. Just remember this sequence: behind-beak-bang.

To nonhunters who have read this far: I'll bet a lot of you thought that shooting birds with a shotgun was easy. Ho, ho. It ain't. You have to learn to do all this stuff, quickly and well. Otherwise you're just out for a walk. A long sweaty walk with wood ticks.

Practice, practice

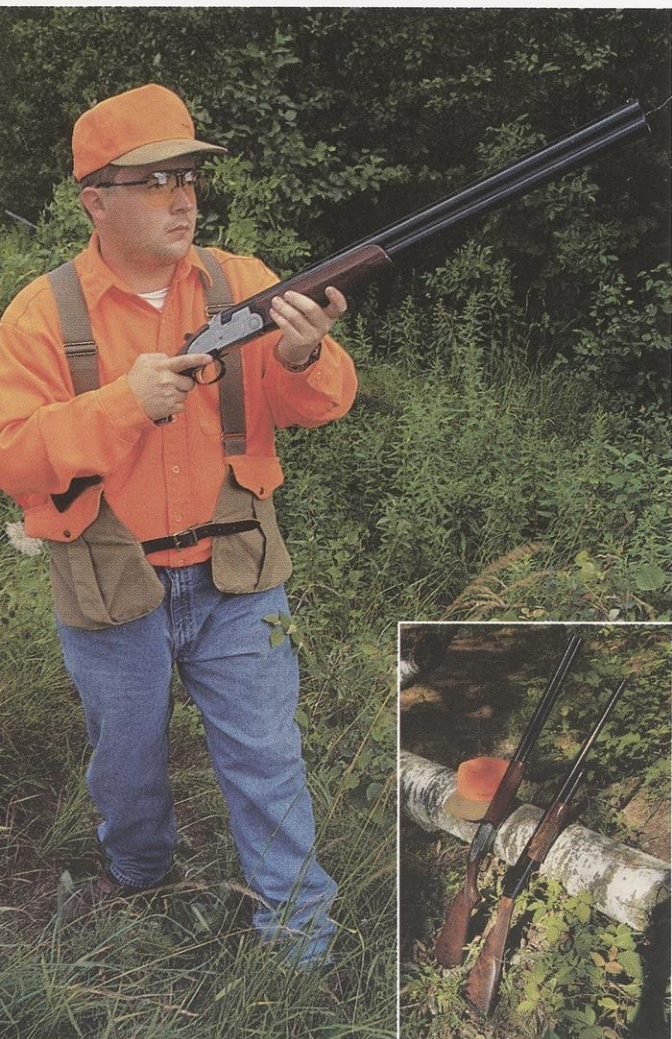
It takes practice on clay targets to make you and your shotgun into a working team. I think the best clay target games for grouse practice are ones you invent for yourself with an inexpensive ground-mounted target thrower, an assistant and an empty field. Obviously, make sure you have permission to shoot and throw targets on the field first.

Tie about 25 yards of heavy cord to the thrower's release and stretch it out directly behind the machine. Set the machine to throw the targets at about a 45-degree upward angle and not too fast. Simulate hunting by walking slowly toward the rear of the machine with your gun on safe and at the ready position, and have your assistant pull the cord from behind you when he or she feels like it.

Work on giving your full attention to the target, stepping toward it with your left foot, developing a smooth, gentle gun mount, and swinging through with your head locked to the stock. At first, concentrate on rising targets flying away from you at gentle angles; later, learn to hit targets flying at right angles. A hundred bucks worth of shells and targets invested in this kind of practice will teach you more than years of banging away in the woods.

Clay target games

Skeet and trapshooting are fun and challenging, but they don't provide much meaningful grouse hunting practice. Skeet shooting requires a "sustained lead" shooting method that I find useless in preparing for grouse hunting. Trap targets are shot at ranges of 30 yards or more with 12- or 20-gauge guns that weigh eight or nine pounds. And only a few of the targets on a typical sporting clays course resemble anything that ever flew, crawled or swam, let alone a grouse. If you're just starting out, skip the organized clay target games. Instead, try to find an experienced shotgunner to teach you the basics with your own target thrower. Also, check out the helpful books and videos advertised in magazines like *Shotgun Sports*.



The grouse hunter has less than two seconds to find the quarry, swing on the target and shoot safely. Whether your shotgun is fancy and sleek or more modest, the key to each successful hunt is lots of practice and comfort with your firearm.

(BOTH PHOTOS) DAVE CREHORE

through using a gun, even for just a minute or two, unload it. Unload before crossing a creek or a fence, while searching for a downed bird, while taking a break, while scrambling up or down a hill.

3. Until a game bird or clay target is in the air, keep your shotgun pointed away from anything that could be harmed. Safe shooters are muzzle-conscious.

Safe hunting

In grouse hunting, two is company and three is definitely a crowd. It's difficult enough for two hunters to stay organized in thick cover; gang hunts involving three or more hunters are dangerous. Hunt alone or with one trusted partner and follow these rules:

1. **Communication:** Grouse cover is thick; sometimes you will have trouble seeing a hunting partner who is only 20 yards away. Make a simple hunting plan and stick to it: Determine who will be on the right and left, which way you will go, and how far you will go before stopping or turning.
2. **Cooperation:** The only safe and effective way for two hunters to work grouse cover is to advance together along parallel lines about 20 yards apart. The hunter on the left will shoot at birds flying ahead or to his left, but will not shoot at birds flying to his right, and vice versa for the hunter on the right. When a shot is fired, all hunting stops until the fate of the bird is known.

Grouse hunters should not engage in "drives," where one hunter walks toward the other, or in "bird-dogging," where one hunter plows through thick cover while the other waits for a bird to burst out. Both of these tactics are dangerous.

3. **Caution:** "Be sure of your target and what is beyond it before you shoot" is the cardinal rule of safe hunting. But being sure of what's beyond a speeding grouse in the thick cover they inhabit is practically impossible. Safety under these conditions requires rigid adherence to two commandments:

- a. In heavy cover, grouse hunters must shoot *only* at birds that are at least eight feet above the ground. Don't shoot at low birds that could have a hunter or a dog behind them!
- b. Wear blaze orange clothing and stay in visual contact with your partner *at all times*. If you lose sight of your partner, stop hunting, call and listen until you locate each other.

Throughout the season, keep your eyes peeled for bow hunters in tree stands. Many of them wear full camouflage and are darned near invisible at a distance. Finally, don't tempt fate by hunting grouse during the deer gun season, especially with a dog.

Eye protection

The branches and berry canes in grouse cover whip back when pushed. Glasses with sturdy lenses will keep these thorny hazards out of your eyes. If you don't wear prescription glasses, get a pair of good-quality shooting glasses with clear or light orange lenses. Avoid glasses with heavy or dark rims that will distract you and block your view.

The long season

Grouse grow on you. Their consistent ability to make fools of men, women and dogs will teach you humility if anything can. Walk the long season through for a couple of years and you'll become hopelessly fond of them, their haunts and their time of year. □

Dave Crehore, DNR's Public Affairs Manager in the Northeast Region, has enjoyed hunting and shooting sports for more than 40 years.

Safety

When I started grouse hunting, my dad made a little speech that went something like this: "It doesn't matter how well you shoot; you'll learn to hit birds with experience. The important thing is to be safe. Good shooters are envied; safe shooters are trusted."

Safe gun handling

1. Assume every gun is loaded until you have personally opened the action and checked the chambers and magazine. Keep the action open until you either load the gun or put it away.
2. Never load a gun until you are actually ready to use it. When you are

Faith in the **ABC's** of **EE**

The issue: a proposed mine. **The setting:** Mark Goings' fourth grade classroom at Robbins Elementary School in Eau Claire, Wisconsin.

Pupils have been studying the matter in and out of class for over two weeks. Three teams of students now face the center of the room. The first speaker stands up and convincingly describes the benefits a mine will bring to the area. When she's finished, a second student stands up and counters with the environmental drawbacks of mining. The third team observes and takes notes as the other two teams exchange views. When both pro and con teams have exhausted their arguments, Goings questions all students on the debate, asks if their views toward the mine have changed, and asks students to discuss possible compromises that may need to be made.

Critics question biases in teaching environmental education, but in Wisconsin there's commitment to stay the course.

Dan Sivek

This real example shows just one way that Wisconsin teachers deal with controversial environmental issues. The educators strive to ensure balanced presentations. They encourage students to think critically. It's the kind of teaching you'd want your children to experience. It's typical of what I've heard from teachers since I started a career in environmental education 20 years ago.

The 1990s have seen rising criticism of how environmental education (EE) is taught. Critics suggest EE programs are incomplete at best, pessimistic at worst. A study of Wisconsin textbooks by the Center for Environmental Education Research in Tucson, Arizona, concluded that "environmental issues are often presented in an emotional rather than scientific manner," that texts avoid economic considerations, and that "Wisconsin

Environmental classes are fun because they combine several subjects, personal observation, individual discovery and group discussion.



ROBERT QUEEN



ROBERT QUEEN

Examine nature nearby. Wetlands, streams, fields, urban lots and forests provide an opportunity to examine our natural world and ourselves.

students are given frightening scenarios of future environmental catastrophes."

An example from Arizona, which appeared in *The Wall Street Journal* seems to support these assertions:

Take for example the 13 essays by second-graders at Canyon View Elementary School in Tucson, Arizona...From the windows of their school, the children watched a housing development under construction. They didn't like it. "The desert used to look beautiful, but now they are wrecking it," wrote one child.

"I love the smell of plants, but all of them are being bulldozed to make apartments," wrote another. "Our class used to sit in the desert to write and do their school activities," said a third. "But now they're using that land just for people to live in homes they don't really need."

Homes they "don't really need"? What, pray, do these young writers live in?

Examples like this were used in 1994-95 to overturn Arizona's environmental education legislation. The National Environmental Education Act was also targeted for nonrenewal, but those efforts failed.

Wisconsin's environmental education legislation has remained largely intact. In fact, we've even seen small increases in funding for EE programs fostered by strong backing from a diverse mix of education, environmental, and other citizen organizations. Still, given a small but vocal group of critics here, the future of EE will also depend on how citizens respond to what they read about schools and make time to see for themselves.

To better understand the objections that EE critics raise, it helps to have a bit of background on Wisconsin's EE laws, a sense of who is funding the anti-EE cause, and an awareness of what is really happening in our public schools. What to do with this information is up to you.

EE in Wisconsin: 1935 to the present

Wisconsin's environmental education law goes back to 1935 when the Legislature first required the teaching of conservation education in the schools.

A committee was established to define conservation and begin creating materials. Among the committee's members was Aldo Leopold, now regarded by many as the "father" of modern environmental education. It's a tribute to Leopold, this committee, and the Legislature that the conservation education requirement remained on the books for nearly 50 years.

In the 1980s, the Legislature began to reexamine the old conservation education law. Lawmakers proposed deleting the conservation education requirements as outdated. They questioned how environmental attitudes were formed and how environmental education was taught.

Established educators, environmentalists and naturalists were concerned that state EE requirements might be weakened or lost. They also recognized that the state EE law needed updating, so they took action. Through extensive grassroots lobbying and testifying at hearings, a Wisconsin Teacher Certification Rule was created. To the credit of the full political spectrum in Wisconsin, this rule mandated that college students planning to become agriculture, elementary teachers; elementary/middle, early childhood; and middle/secondary and secondary science and social studies teachers needed EE training as part of their coursework. The task fell to universities to ensure that teacher candidates are proficient in four content areas and three teaching methods areas.

Shortly after the teacher certification rule passed, it became clear that more uniform EE standards were needed in schools. Again, through grassroots activism across Wisconsin, constituents convinced state government to incorporate an EE curriculum in state educational standards. Now, each school must craft a written, sequential, kindergarten through 12th grade EE program that is infused into existing subject areas. Environmental education is especially emphasized in science, social studies, art and health classes.

Five major concepts guide the Wisconsin EE curriculum. Students are

expected to acquire:

- *awareness* of the environment and of environmental issues; and a sensitivity toward the environment
- *knowledge* of ecology and environmental problems
- *an environmental ethic* on which students may act to defend, improve, or sustain the quality of life
- *citizen action skills* to have the expertise to identify, investigate, and evaluate environmental issues
- *citizen participation skills* to act on issues if one's beliefs and values support it

If educators follow these guidelines, their classes can enjoy high-quality experiences that maintain a balance of cultural and political biases. Moreover, their graduating seniors should be more knowledgeable and skillful environmental problem solvers.

In 1990 the State Legislature created a Wisconsin Environmental Education Board to promote EE in all segments of society and to represent a range of interests in forming educational policies and funding educational projects.

Critics and criticisms of EE

Nationwide, the most vocal critics of the ways environmental education is currently taught include Michael Sanera, a political science professor at Arizona State; Jo Kwong, an environmental researcher and Public Affairs Director for the Atlas Economic Research Foundation in Fairfax, Va.; and Jonathan Adler, an environmental policy analyst with the Competitive Enterprise Institute. Their supporters include a number of think-tanks — the George C. Marshall Institute, Atlas Economic Research Foundation, and the Heritage Foundation, among others. In turn, these politically conservative think-tanks are funded by various foundations, several with Wisconsin connections.

A June 1996 study in which Sanera examined the content of environmental textbooks used by 12 Wisconsin school districts concluded these texts "present human beings as evil and blame the United States in particular and Western industrial societies in gen-



DAN SIVEK

The crux of the criticism

The arguments against current EE practices are summarized below with responses from environmental educators with the National EE Advancement Project:

1. EE is based on emotionalism, myths and misinformation.

Critics select phrases and selected passages from EE textbooks that they believe are flawed, or share values rather than facts. Certainly, some curricular materials are flawed, others are excellent. Classroom teachers are capable of interpreting and presenting these materials to show their biases. There are many excellent resources educators can use when preparing their lessons, and EE techniques that can help both educators and students recognize misinformation based on emotional appeal rather than fact.

2. EE is often issue-driven rather than information-driven.

Society needs people who can process information, critically analyze it, synthesize new ideas and develop strategies to deal with issues. One needs a factual baseline, but one also needs the skills to analyze situations and propose solutions. Real life situations require dealing with issues, not just trading facts.

3. EE fails to teach children about basic economics or decision-making processes, relying too heavily on emotional slogans and appeals.

Economics has not been a major focus of EE materials, and the profession recognizes that this area needs to be beefed up. However, interpreting economic consequences is only one component in balancing decisions once one understands underlying ecological systems. Critical thinking skills are an important component of EE curriculum.

4. EE often fails to take advantage of lessons from nature and preaches socially- or politically-correct lessons.

Nonsense. A basic understanding of natural systems is critical to studying concepts like sustainability, carrying capacity and biodiversity. Well-taught EE does not preach about what to do or think.

5. EE is devoted to activism and politics rather than knowledge and understanding.

EE is all about knowledge and understanding. Developing knowledgeable, active citizens demands providing and building skills to assess and clarify one's values, and teaching the art of good citizenship. The environment is connected to so many other issues that informed citizens need to learn about environmental issues to have a reasoned say in their future.

6. EE teaches that people are an intrusion on the earth and, at times, evil.

EE is not anti-human. Pointing out human impacts on the environment illustrates why people and nature need to be viewed as co-dependent, rather than separate from each other.

eral for every environmental ill."

Sanera criticizes texts for understating a range of social and economic values, for having a "pervasive" bias against economic growth and technology, for making children feel guilty about the material advantages Americans enjoy, and for presenting people as being "against" nature rather than a part of it.

Evaluating whether teaching materials contain biases can be an important part of lessons that teach critical thinking in the classroom.

Rick Wilke, UW-Stevens Point professor of Environmental Education and Director of the National Environmental Education Advancement Project, says the most organized attacks on EE "emerged in 1995 with formation of The Environmental Education Working Group. Some [of the anti-EE critics]...may actually desire to improve the scientific and economic base for decision making. However, some are more interested in promoting their own anti-environment agendas."

What is happening in Wisconsin schools?

Wisconsin teachers, students, and administrators were surveyed beginning in 1990, prior to most of the national EE criticism. More than 3,500 students, 900 teachers, and 1,100 administrators were surveyed. The final report, called "Are We Walking the Talk?" was completed and announced early this summer. In a nutshell, its findings show strong support for requiring environmental education from all three groups.

On the other hand, there is also room for improvement. Students' knowledge of the environment was rated as "low" as were their skills to take actions to improve environmental quality.

However, attitudes toward the environment were very positive and there are many fine programs that set positive models across all grades and subject areas. Here are a few:

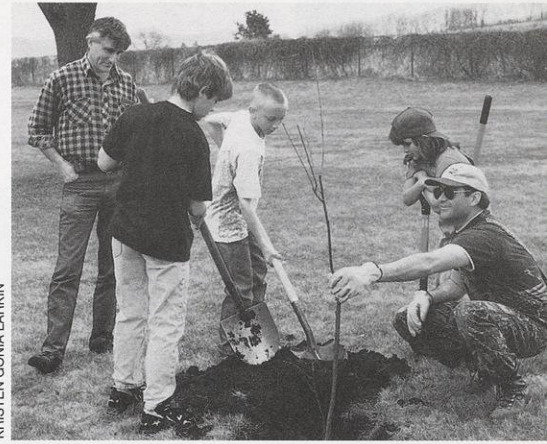
Kristen Gonia Larkin teaches sixth grade in Bangor, Wis. In a teaching unit on business, students created a busi-

ness called "Hands On Nature." The vice president of a local bank spoke to students about challenges in operating a small business, and a representative from a nearby lumber company spoke about the lumber business. Students decided to start their own business after completing a market survey. They identified products, their roles, production time, and even took out a loan from a parent committee. About 70 percent of their work took place outside of class. They took orders and sold out of their first product line. For their second project, students proposed a "tree walk." The lumber company donated proceeds from the first product to fund the second. Students solicited and

at Wisconsin Rapids' Lincoln High School. Sue Wisen teaches English. Together they teach a course called Environmental Enterprise. "It was the first fully integrated course at LHS," says Harv. "We combine math, history/social studies, and philosophy." Students begin the course studying the writings of environmentalists, which emphasizes English and philosophy. Later, they study environmental issues. An ongoing project combines data from other schools that also monitor the Wisconsin River (WREN, the Wisconsin River Environmental Network). The culminating course experience is an investigative project requiring thorough research and actions. Past classes have written letters to government, spoken to community groups and posted flyers around school describing the issues they've studied. "It's definitely a lot of work," many students tell Harv and Sue, "but it's also the best class I've ever had."

Neil Dullinger teaches biology and advanced biology at Mukwanago High School. His Master's research at UW-Stevens Point led him to rethink how societal "issues" can be "taught." It's become clear to him that trying to per-

suade students to take a particular view on an issue is counterproductive. "High school students are too smart," he says, "and those opposed to the view only strengthen their resolve."



(above) Bangor students used proceeds from a class business venture to plant a community tree walk.

(below) Lincoln High students marked and recaptured turtles in an Environmental Enterprise class that combines biology, math, social science, language arts and philosophy.



UW-STEVENS POINT NEWS SERVICE

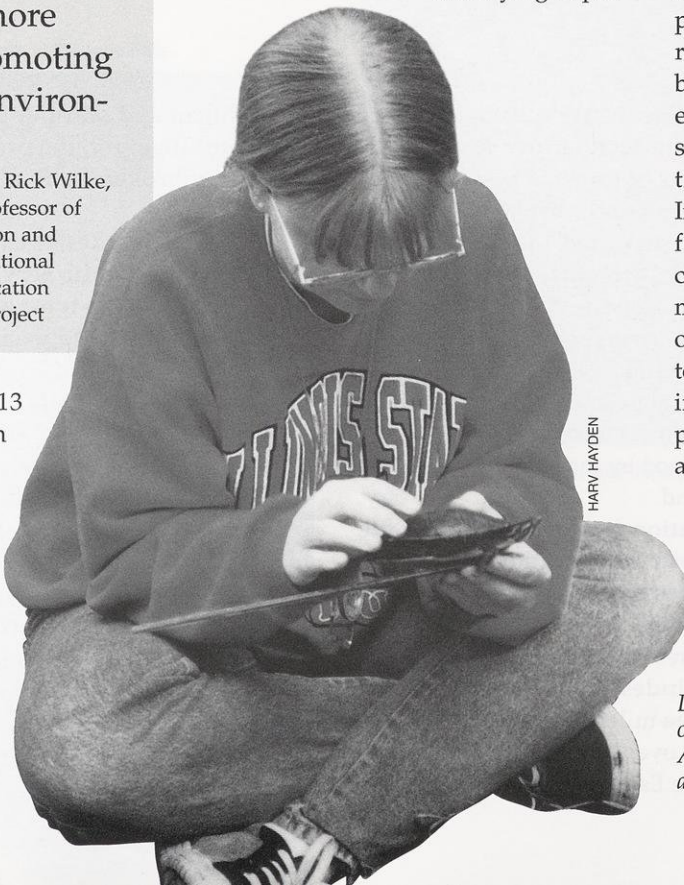
"Some [of the anti-EE critics]...may actually desire to improve the scientific and economic base for decision making. How-

ever, some are more interested in promoting their own anti-environment agendas."

Rick Wilke,
UW-Stevens Point professor of
Environmental Education and
Director of the National
Environmental Education
Advancement Project

received donations for 13 memorial trees. From start to finish, Kristen's students learned math, science, marketing, word processing, and computer technology skills to complement the lessons learned about forestry and renewable resources.

Harv Hayden teaches high school biology



HARV HAYDEN

Neil found that students respond better to open-ended discussions of issues, and learn important skills in the process.

What about tomorrow? For at least 62 years, Wisconsin teachers have proudly carried a conservation/environmental education torch. They've been aided by nature centers, higher education, zoos, museums, the Wisconsin Department of Natural Resources, the Wisconsin Department of Public Instruction, the Wisconsin Association for Environmental Education, and countless others. Wisconsin environmental educators believe we have come out of the current fray, and just as we teach students, we are stronger for having engaged in healthy debate about presenting classroom materials in a balanced manner. □

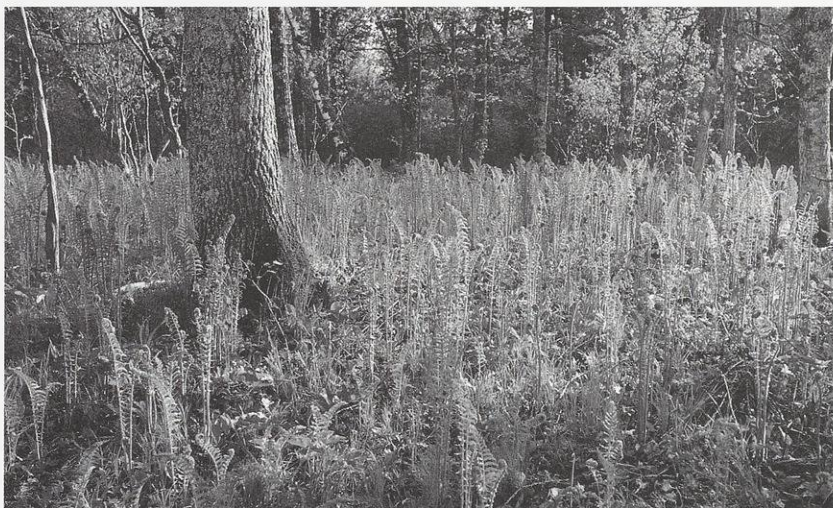
Dan Sivek is an Associate Professor of Environmental Education at the University of Wisconsin-Stevens Point. He is also secondary specialist for the Wisconsin Center for Environmental Education. Previously he served as an Environmental Education Specialist for DNR's West Central Region. He has served on the board of directors of the Wisconsin Association for Environmental Education, and was president for two years.

Borderline beauty

A land gift on our northeastern boundary
preserves a wild riverside.

Katherine Esposito

Story photos by Dave Crehore



(left) During our visit in early June, trillium bloomed in a wooded riverside opening.
(right) A lush growth of ferns filled in the understory.

For those who explore the Wisconsin/Michigan border country near the Menominee River, it's a dream come true: Acres of forest, a rushing river, riotous waterfalls. Home to timber wolves, black bears, and eagles. Lots of ticks, too, unfortunately.

It's a gift of land: 1,920 acres just south of Quiver Falls and west of the Menominee River in Marinette County, Wis., and 2,530 acres on the eastern side in Menominee County, Mich. Now known as the Menominee River Natural Resource Area, the land is being donated to the two states by the Richard King Mellon Foundation, helped by the technical expertise of the Conservation Fund.

The Mellon Foundation frequently assists state and federal agencies with conservation efforts. The Pittsburgh-based group is spending about \$3 million for the entire tract and will lease the land to the states for three years before presenting it as a gift.

The area, which includes about five miles of the Menominee River, three miles of the Pemebonwon River in Wisconsin and over a mile of Pemene Creek in Michigan, adjoins the Escanaba River State Forest

in Michigan and Marinette County forest lands in our state. Together, the properties offer mile after mile of unbroken habitat for wildlife and plant species.

For seven decades, the land has been owned by the Wisconsin Public Service Corporation, which planned to develop it for hydroelectric power. But fossil fuels dominated the industry for many years, and by the time hydro was again seriously considered, the environmental obstacles were deemed "almost insurmountable," according to Ed Newman, WPSC's director of environmental services.

Over the years, the utility proved to be an excellent land steward, helping restore the forests that had been cut during the northern logging boom of the late 19th century. Though much of the area was logged, some stands remain that never felt an axe.

Dan Deacon, a farmer and mail carrier from Faithorn, in the Upper Peninsula of Michigan, traces his local roots back to the Civil War. Very little has changed in the 50 years since he first explored these lands as a boy, Deacon says. Remnants of a dam hand-built by workers of the Menominee River Boom Co. nearly a hundred years ago can still be spied at Quiver Falls, at the northern end of the new Resource Area, he says.

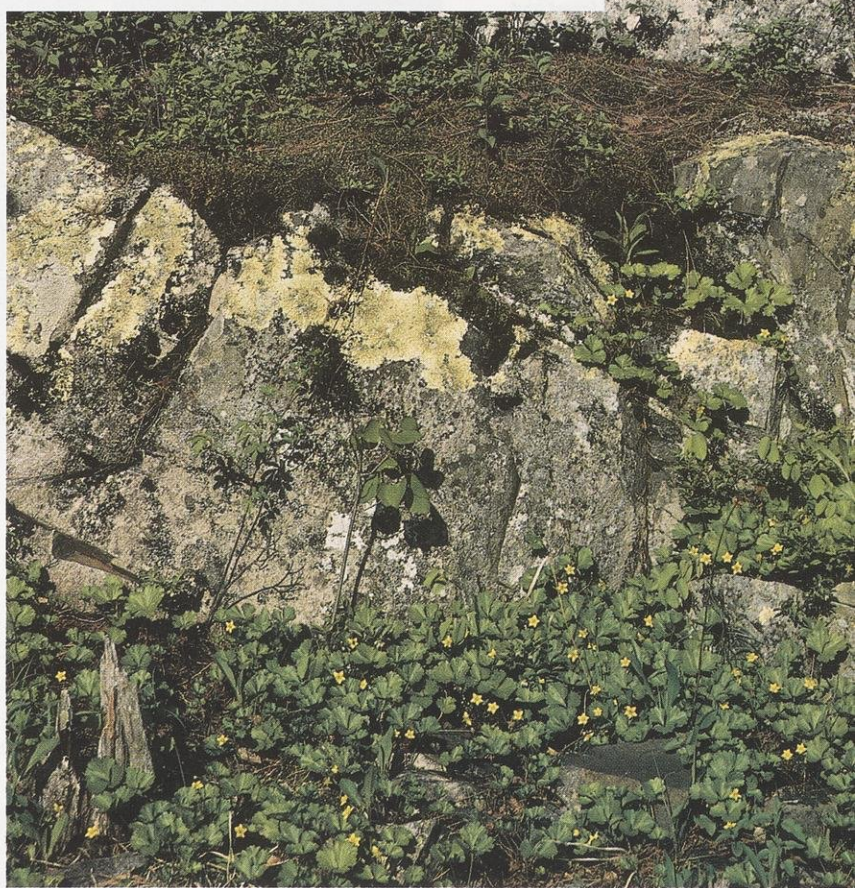
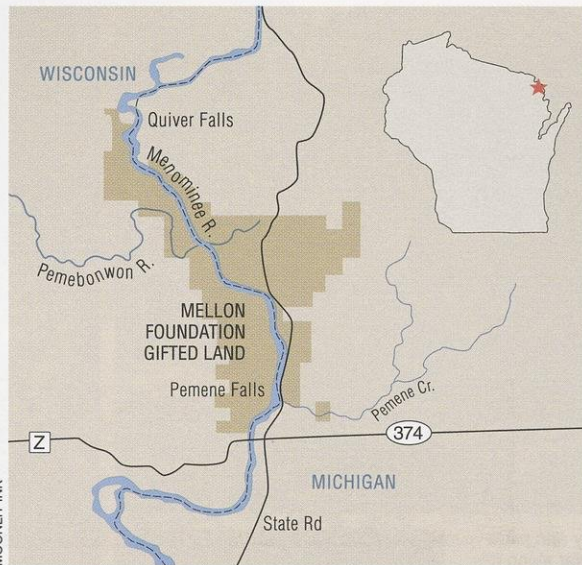
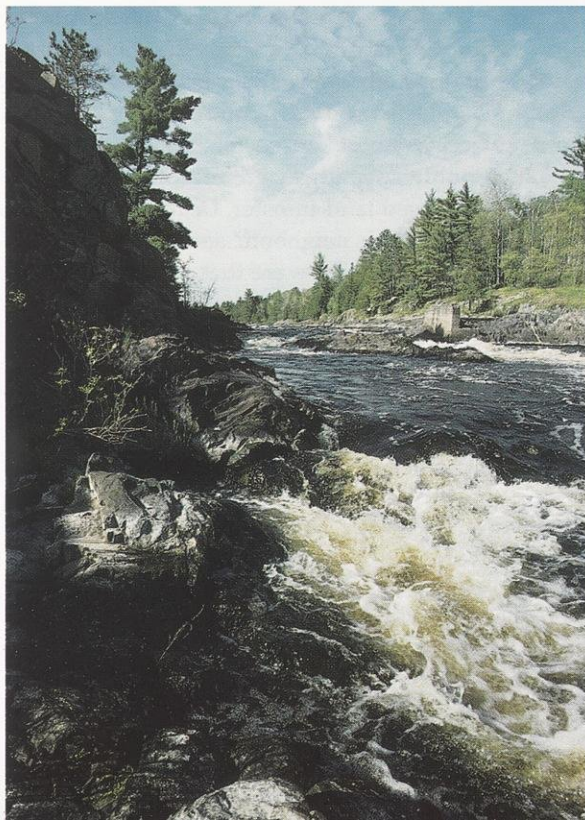
The five-mile reach of river between Quiver Falls and Pemene Falls is quick and boisterous in places, edged by rocky bluffs on the Michigan side with woods and swamps beyond. Other stretches of the Menominee are calm and wide, a canoeist's paradise framed by overhanging trees of emerald green.

No homes were ever built here, and almost no roads, either — most byways are just the remnants of old logging trails. That's the way Deacon likes it.

"If you have to have a motorbike or a four-wheeler, maybe you shouldn't go," he says.

"It's a great place to fish, hunt ducks, or just walk around and look," he continues. "And you can pick the wintergreen off the rocks — not all wintergreen comes from a pharmacy." Berries of all kinds abound, too, though you might find yourself competing for them with a black bear or other animal.

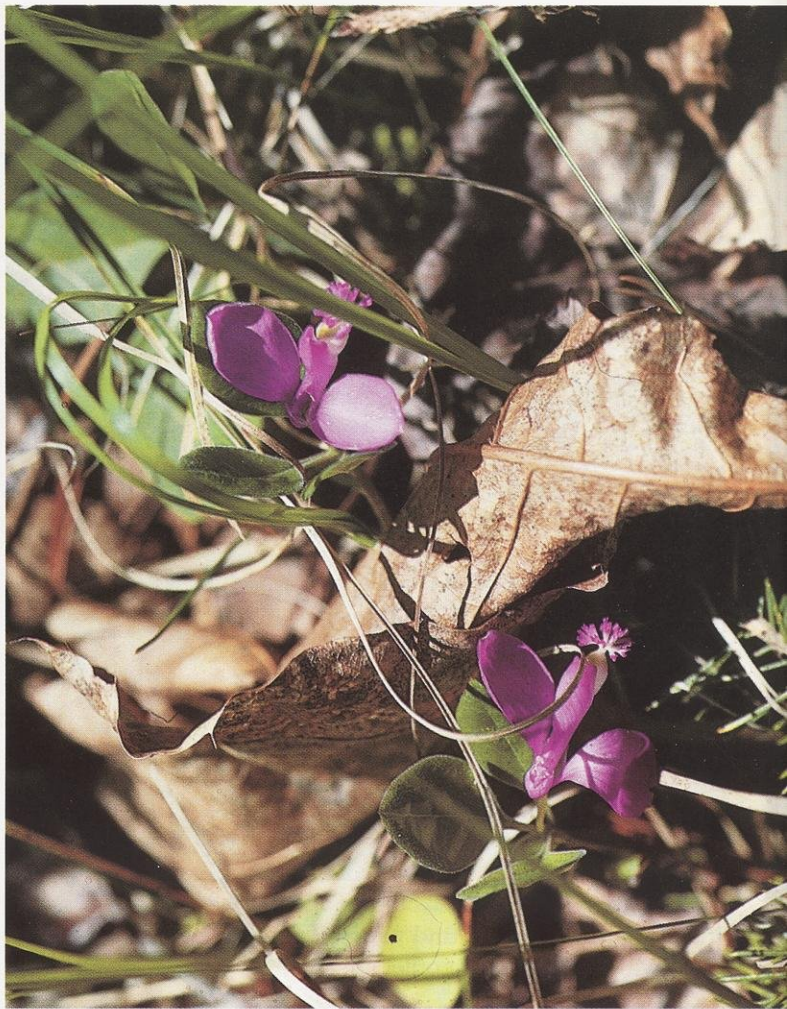
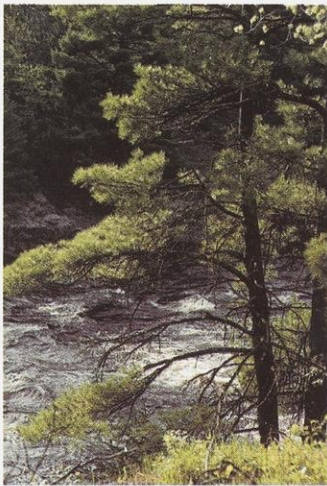
Rushing waters spill over the rocks at Pemene Falls.



Barren strawberry (*Waldsteinia fragarioides*) clings to a rocky slope by the Menominee River.



The fishing, scenery and plant life are all spectacular along this rugged ribbon of forest and water that form a bit of the Wisconsin-Michigan border. (far right) Gaywings, also called milkwort (*Polygala paucifolia*) poke through the leaves and grasses.



During the 1800s the Menominee River was frequently awash in logs — white and Norway pine milled into lumber for settlers' homes in Wisconsin, northern Illinois and the Great Plains. Those years probably were the most frenzied in the river's history. Ten centuries ago, the calmer waters sustained generations of Native Americans who camped along the water, fished for sturgeon, and hunted bear and deer.

Several sites along Pemene Creek and Pemene Falls suggest seasonal Native American fishing camps or villages, according to archeologists. The local people would canoe downstream to camp at the mouth of the Menominee, and return upriver in late summer. Winters were spent at inland lakes to the west.

The hunting and fishing still is good, though don't look to Dan Deacon to tell you his favorite spots. Some subjects are best kept secret, he says.

When public meetings were recently held to discuss the proposed land transfer, Deacon says he was a bit surprised at his neighbors' sentiment. "People I wouldn't have thought were that concerned about the environment were all in support, and wanted it to remain in local ownership. The power company listened to them," he says.

So, from the people of Wisconsin and Michigan, thanks to Wisconsin Public Service Corporation for taking care of the land and giving us first dibs. And thanks to the Mellon Foundation and the Conservation Fund for the money and skill in making a good deal for everyone. □

Katherine Esposito is a staff writer for Wisconsin Natural Resources.



Operating with a new attitude

Katherine Esposito

Story photos by Robert Queen

It is lunchtime at St. Luke's Medical Center in Milwaukee, at the junction of 27th Street and Oklahoma Avenue. A burly, balding man in a white T-shirt and matching overalls ambles over to an alcove just outside the cafeteria. He carries a small Styrofoam plate, which he places in a bin marked "Polystyrene," and a Styrofoam cup. He pauses to empty the remains of his drink. Then the cup, too, is tossed into the bin.

On the eighth floor, in the Oncology Department's medication room, a tall wastebasket with a swivel lid is filled almost to the brim with empty IV bags, plastic bottles and wraps. Down the hall, in the nurses' station, large rectangular paper recycling boxes are in

Prompted by a new state rule, hospitals and other health care businesses are learning to manage medical waste with surgical precision.

plain view on the floor, and are emptied when full into larger bins nearby. Those big bins are marked to accept different kinds and grades of paper, and keeping them separate pays nice-

ly: the higher grades fetch twice the price of the lower grades on the waste paper market, says Aralee Scardina, the center's environmental services manager.

At Scardina's office in the administrative wing, there's not a single garbage can to be found, but recycling bins for everything from paper to plastic to glass to batteries are in plain view. A person wanting to pitch a piece

(above) Lunchtime at St. Luke's is a "sorted" affair where trash parts company from polystyrene, glass, metal and aluminum.

(below) Used materials are sorted and bagged by type.



of gum is directed to the closest "real" trash can — in this case, it's a 10-inch paper bag stuck to the underside of each desk.

Only a few years ago, if a hospital employee had questioned the standard practice of sending thousands of single-use supplies to the garbage dump



each year, he or she would have been ignored, if not ridiculed. Today, these examples of waste separation at St. Luke's mark a silent revolution taking place in Wisconsin medical institutions, and signify the end of decades of wasteful habits.

Medical businesses initially were exempted from the 1989 statewide recycling law as the legislation aimed to tame the more common wastes made in larger quantities. That all changed in 1994 with the passage of a new state rule designed to lessen the amount of trash produced by hospitals, clinics, nursing homes and medical laboratories.

The law is feeding the enthusiasm of people like Scardina, and undoubtedly irritating those less inspired.

(above) This medical center is committed to change, says Environmental Services Manager Aralee Scardina. Recycling has saved St. Luke's \$120,000 in landfill costs in less than two years. *(below)* Patient supplies, used needles, other "sharps" and packaging around linens are now separated from the red-bagged infectious wastes that head to an incinerator.

Either way, the movement has begun.

"Change is always an interesting experience," Scardina says, speaking of occasional indifference on the part of hospital staffers. But, she adds, "I'm real proud of people who have been able to work with [the new rule]. There's a real commitment on their part."

Designed for disposal

Thirty years ago, that lunchtime cup and plate would have been made of heavy ceramic, and washed when dirty. Thirty years ago, patient wash basins, bedpans and water pitchers were molded of stainless steel and used over and over again. But, just as pre-packaged, pre-filled, and pre-measured everything entered the grocery stores and kitchens of America, so went the trend in medical supplies. A wholesale switch to disposables started in the late 1960s to reduce labor costs associated with cleaning, repackaging and sterilizing supplies as well as reduce the chance of transmitting disease.

Today, when a patient's stitches are ready to be removed, nurses no longer need to gather supplies from different rooms but can simply order a sterile, plastic-wrapped



suture removal kit complete with scissors, forceps, and antibacterial swabs. A liter of normal saline intravenous fluid now is packaged in a soft bag made of polyvinyl chloride resin, 20 bags to a cardboard box. And many medications come directly from the hospital pharmacy in disposable syringes, ready for injection.

Until recently in Wisconsin, and as is still the case in most parts of the country, all these products were thrown away after use. Plastic IV bags have become especially prevalent in hospital trash, as have plastic syringe cases and blue polypropylene covers for trays of surgical instruments. And when a technician sees surgical scissors embossed with the word "disposable," that's exactly what happens.

All too frequently this type of trash was put in the special red bags for infectious waste marked "Biohazard" that would go to the incinerator. That was a cheap solution so long as the medical waste incinerators were next door and owned by the hospital, but most of these incinerators have been closed due to air pollution concerns. Their infectious waste must be trucked to licensed treatment facilities that are typically near town but farther away from residential neighborhoods. Now the cost of treating infectious waste, either by incineration, microwaving, or autoclaving, has gone "sky high," according to Barb Bickford, DNR medical waste coordinator.

Couple steep prices with the new law, and it's no surprise to find a marked reduction in the amount of waste being treated as if it were infectious.

The heart of the rule requires hospitals, medical clinics and nursing homes to look closely at their waste, to determine what truly needs special treatment and what doesn't, and to separate their waste streams. Infectious waste always must be isolated. Then, the "regular" garbage is inspected further, to discover how it too, can be reduced. This may mean recycling, as in the case of polystyrene dishes and polypropylene ice pitchers; reusing, as in washable dishes, cutlery, waterproof pads, and surgical instruments; or

reduction, as in the case of buying supplies in bulk to reduce packaging. Some doctors and nurses even are taking the initiative to collect and donate unused supplies to charities and developing countries.

Another part of the rule requires that used syringes and other medical "sharps," from diabetics injecting insulin at home, or veterinarians and farmers injecting animals, be kept separate from regular trash.

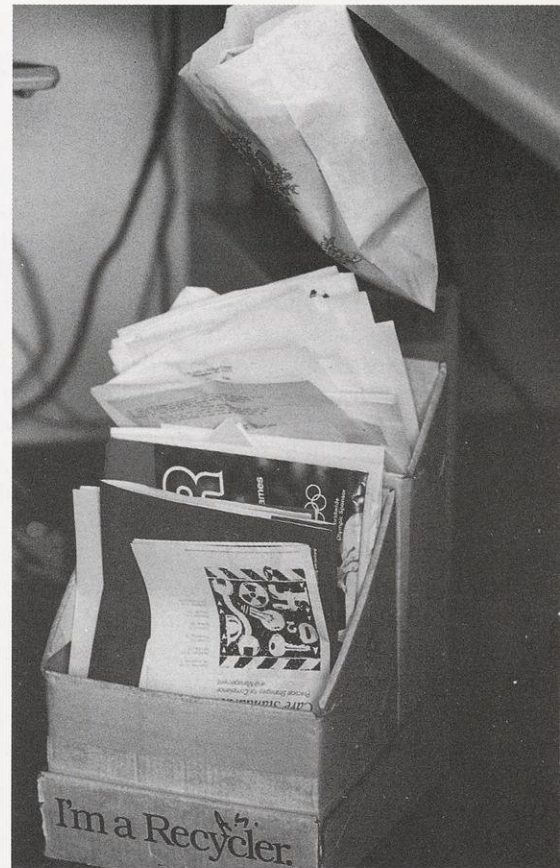
Cleansing the medical waste stream

The focus on waste reduction has led to a new appreciation of just how confusing a ubiquitous term like "medical waste" can be. In Wisconsin, the term "infectious waste" is reserved for those items that can actually pass on disease, such as needles and blood-soaked items. "Medical waste" is considered to be infectious waste plus anything mixed with it. So, if the waste hasn't been sorted carefully, as was historically the case, a garbage bag could consist of a few bloody towels and sponges from the operating room, and a few pounds of recyclable plastics. Just those few contaminated items would dictate incinerating of the entire bag.

At any rate, the medical managers who have embraced the new rule are finding that recovering wasted materials is reaping big rewards, in money not spent and natural resources saved.

At Ripon Medical Center in Ripon, a 40-bed hospital typically half full, about 850 pounds of "red bag" waste was hauled for treatment by Brown-Ing-Ferris Industries (BFI) last June, down from an average of 1,800 to 2,000 pounds per month before a separation program was begun. Just removing the red bags from patients' rooms helped a lot, said Phil Schaffer, director of plant operations. "We had everything going in there — anything that touched the person went into red bag waste," he says. Leslie Boerger, a major account executive with BFI, estimates that the hospital has saved about \$100 every month with the new program.

Not only did Ripon reduce its infectious waste, it also sent off 345 pounds



Office waste is sorted into slicks, high-grade letter paper, computer papers and newsprint that have value for recycling. The tiny bags hold true trash.

of assorted plastics in just one month last spring to Tri-State Hospital Supply Corp. The small, national company both sells hospital supplies and receives them after they are soiled, for recycling or reuse. Some parts of Ripon's contract with Tri-State cost them more, Schaffer says, but they are offset by reduced disposal expenses.

St. Luke's Medical Center, and, increasingly, the entire Aurora health care system in the greater Milwaukee area, have contracts with Tri-State for plastics supplies and recycling. Tri-State also sells recyclable plastic bags for dirty linen, and provides and resharpsens metal scissors, hemostats, and similar instruments.

Bag by bag, those numbers add up. With 1,000 hospital linen bag contracts nationwide, Tri-State turned 1.3 million pounds of used polyethylene plastic bags back into new bags last year, says Dave Taylor, Tri-State's regional manager. In Wisconsin, where the firm now has several dozen contracts to

recycle other plastics as well, the new rule "literally catapulted" recycling, he adds.

Another company seeking innovative ways to address the hospital waste question is Rexam Medical Packaging, of Mundelein, Ill. Rexam, a national maker of packages that are later sterilized with hospital supplies inside, has looked at the types of plastics and paper used in making those packages. Because the firm deals with many hospital supply companies of every size, it has been in an ideal position to coordinate package manufacture so that the outer wraps can be more easily recycled after the inner supplies are used.

That is not to say that all those packages are actually being recycled, however, says Lisa Stec, a Rexam research chemist. There still are plenty of challenges confronting would-be recyclers. "There's still not enough of any particular packaging type to make recycling worth it," Stec says.

The company is working to solve that problem: One of Rexam's top vice-presidents is currently a member of the Healthcare Resource Conservation

Recyclers call it "closing the loop." Used plastics collected at the hospital return as new products used to care for patients. The white buckets contain scalpel blades and scissors that will be resharpened and refurbished for reuse.

Coalition, a three-year-old national association of hospitals, clinics and product suppliers working together to reduce medical waste. The group soon will have an Internet address to help people communicate about these issues.

Sharing information is essential in the recycling field. Rexam, for instance, has helped Tri-State by chemically analyzing a particular plastic, to help Tri-State find markets for some of the soiled items it accepts from hospitals.

New markets, old problems

All kinds of spent plastics are waylaid for a while at Tri-State's local warehouse in Pewaukee. At one end of the cavernous building, hippo-sized bins of smelly polystyrene food dishes share the floor with other sorted and soiled plastics, all ready to be shipped to various processing plants. Some will be ground into flakes and eventually molded into new, sterile bedpans and basins. Some is eventually added to concrete to make foundation blocks.

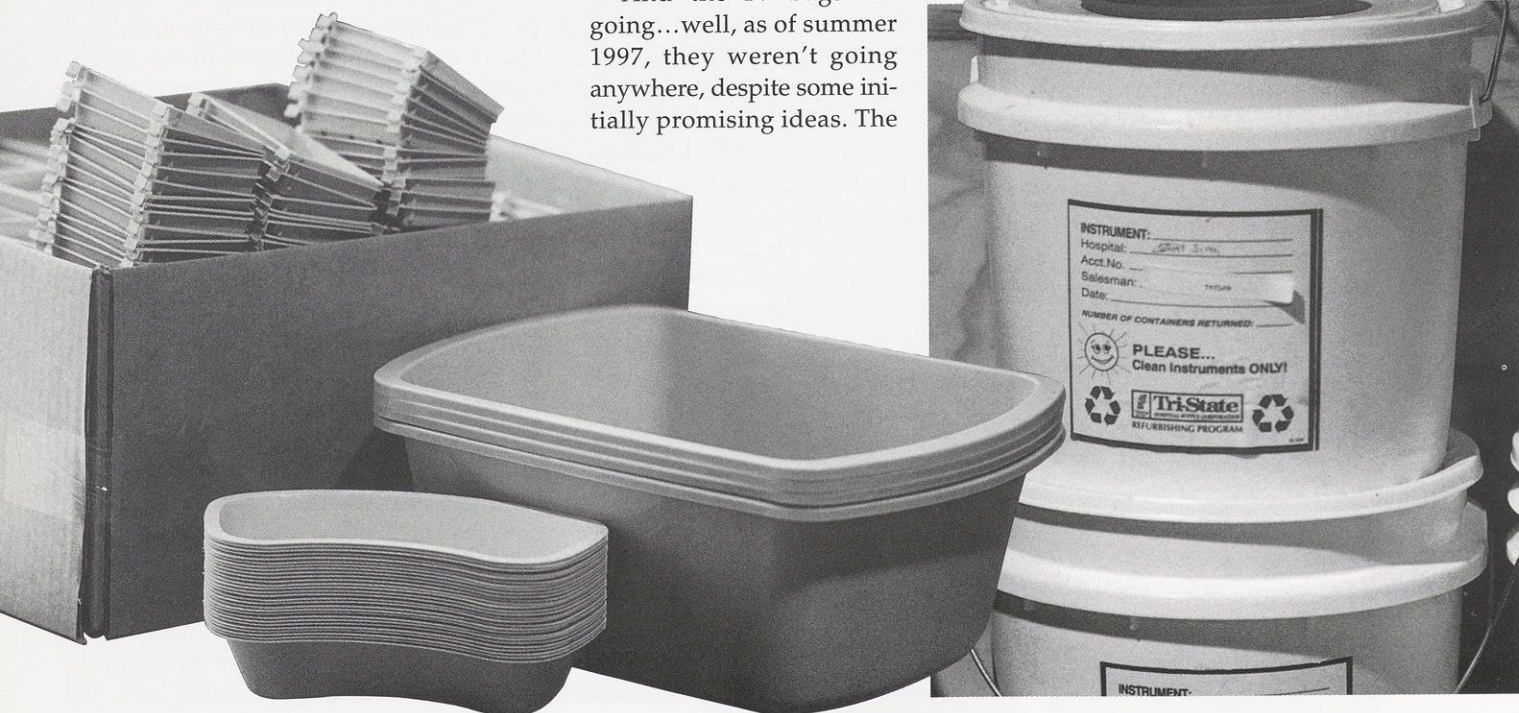
The blue polypropylene wrappers that cover bulky trays of surgical supplies during sterilization are sent to a recycler who is now reformulating them into McDonald's food trays, according to Taylor.

And the IV bags are going...well, as of summer 1997, they weren't going anywhere, despite some initially promising ideas. The

lack of a good market is one the most frequent obstacles faced by would-be recycling innovators. Or perhaps there's a market, but the difficulty is it's too costly to collect a full truckload of one harder-to-recycle plastic type from dozens of small hospitals and clinics.

Some would say the bags should be made from a plastic that can be more easily recycled, placing the onus on the manufacturer instead. That may be true. Some would say, as does Taylor, that the state should require the recycling of all grades of uncontaminated plastic, not just numbers 1 and 2, to encourage creativity and to increase the supply.

So far, however, the marketing and technological barriers to recycling those plastics, as well as the high costs, have kept people like Taylor dreaming. Sorting plastics remains just one of the problems, says Kate Cooper, chief of DNR Waste Management Planning and Evaluation. "At a sorting facility, people have to move quickly," she says. "They don't pick up a bottle and gaze at it."



Getting the point on sharps

Many Wisconsin diabetics on insulin may already cap their used needles and toss them into an empty detergent bottle instead of throwing them into the nearest trash can. But some of us, including this author, had to be embarrassed into changing our ways after being chastised by a garbage collector, who once found a capped, but loose, syringe mixed in with my general trash.

That syringe undoubtedly was frightening to behold: insulin needles are sharper than any used for sewing, fully capable of piercing tough leather gloves; there is also a risk, however small, of disease transmission. Workers have been stuck while collecting and sorting garbage and recyclables, and occasionally, whole bottles have broken open on conveyors and in compactors. In short, mismanaged syringes create trouble for everyone.

Statewide regulations now require home users of "sharps" — a term that includes syringes from the injection of animals and humans, as well as scalpels and lancets — to store them in a sturdy bottle, labeled with the words "Sharps — do not recycle." When the bottle is full, it should be capped and taken to a pharmacy, hospital, or government agency set up to accept them.

The cost is either free or minimal for home users, and



no records need be kept. And, for institutions producing less than 50 pounds per month of infectious waste — which may also include blood, body fluids, human tissue, and the containers that hold them — the requirements still are slight. The waste must be kept separate and recorded, and disposed of at a licensed treatment facility.

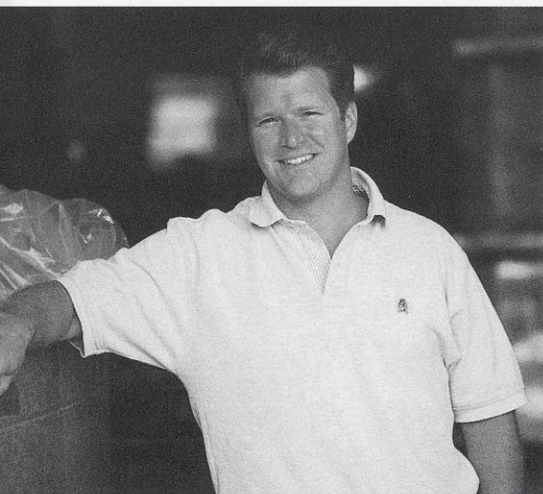
Lowering infectious waste production to less than 50 pounds each month has actually become a goal for some medical institutions, because new conditions kick in once that limit is exceeded. Those include submitting yearly reports to the DNR, ensuring that infectious wastes are separated, and carrying out a plan to reduce the rest of the waste stream. Timelines for those waste-

reduction plans vary according to the size of the clinic, hospital, or nursing home.

As of last summer, more than 400 institutions large enough to meet the reporting criteria had done so, and there are more out there, according to Barbara Bickford, DNR medical waste coordinator.

For more information, call your DNR regional office and ask for the waste management specialist.

And for a list of the over 300 registered sharps collection stations statewide, contact the DNR or call the American Diabetes Association's toll free number 1-800-342-2383.



"We never say no," says Tri-State's Dave Taylor. The company provides hospital supplies and solutions to reuse wasted resources.

For now, however, a sign on a door at Tri-State proudly proclaims, "We Never Say No," describing Taylor's philosophy.

The sign was printed after an employee said "can't do" to a hospital staffer inquiring if a particular item could be recycled. That's no way for a recycler to stay in business, Taylor believes. "Many hospitals ask us to do things. We find a way to do it," he says.

Scardina estimates recycling has saved St. Luke's \$120,000 in landfill costs. The numbers speak for themselves: In 1991, when her program was started, virtually no cardboard or plastic had ever been recycled at the hospital. By 1996, paper recycling had quadrupled, to 423,000 pounds, cardboard recycling stood at

about 340,000 pounds, followed by 75,000 pounds of varied plastics.

Meanwhile, the amount of trash St. Luke's sent to the landfill dropped pre-

cipitously, from 4.7 million pounds in 1991 to a little over 2 million pounds in 1996.

If Wisconsin's law were extended to the nation's hospitals, which are estimated to generate 12 million pounds of trash *every day*, just imagine the difference it would make.

"We are such a minor player, it's so incredible," says Taylor. "I'm not a green thumb person, but after we started recycling linen bags, I got a sense of what would've gone to a landfill."

The amount of plastic Tri-State recycles in a year, about equals the amount that one supplier sells to all the Los Angeles hospitals in a month, he continues. "The sky's the limit." □

Katherine Esposito writes about natural resource and environmental issues for Wisconsin Natural Resources.



Loons call on Scott Lake.

A meander through the Big Chip

The Chippewa Flowage, a watery northern maze of islands and floating bogs, beckons anglers and wildlife watchers in search of the finest nature can offer.

Ray Larsen

Story photos by Robert Queen

The Chippewa Flowage: Perhaps no inland body of water in Wisconsin has more history or mystique. Under the water is the homeland of a proud people; in the water may swim the largest musky in the world. We look at the giant pines and try to imagine the stories breezing through their needles; overhead, an eagle shrieks in its boundless domain. We rekindle the cold campfire to brew that first steaming cup of coffee, glance at the boat tied to the log by our island campsite, and anticipate the upcoming try for a legendary world-record musky.

Yes, this is the way it should be. In northern Wisconsin, in the center of Sawyer County, on the lake and land of legends, the Chippewa Flowage.

The "Big Chip," a 15,300-acre im-

poundment, is Wisconsin's third largest lake. First filled in 1924, this sprawling water body has a highly irregular, wooded and generally undeveloped 233-mile shoreline. It's dotted with approximately 200 enchanting islands.

The flowage is renown for its spectacular natural scenery and excellent fishing. It has a national reputation as a top musky water, and provides some of the finest walleye fishing in Wisconsin. Its seemingly endless maze of islands, points, bays and channels, accented by birch, aspen and pine, offers visitors numerous opportunities for exploration, discovery and a feeling of intimacy with nature. Almost all birds and animals indigenous to northern Wisconsin are found within the area. Visitors rate the scenery, undeveloped wild character, uncrowded

atmosphere and fine fishing as the Big Chip's most outstanding attributes.

A tour of the Big Chip

The rolling topography of the Chippewa Flowage is split into two basins by County Highway CC. Starting at the bridge in the center of the flowage, traveling southwest in a clockwise fashion, we find the CC South landing, the most-used public landing on the flowage. Then we travel down the first entrance to Scott Lake, the north shore of which shelters a great blue heron rookery. The big birds are especially lively during spring, when the raucous young demand food. To the west and south, we'd see shallow, secluded James Bay, a good fishing spot when the walleyes are active. Next is a Lac Courte Oreilles public boat landing



near the Blueberry Bridge on Highway CC, a popular shore-fishing area. To the north are some private homes, a resort and mobile home park. Further north is the start of Tyner Lake, an old river channel meandering for about a mile to Chief Lake.

Chief Lake's east shore is totally undeveloped, but along its south and west shores, resorts are interspersed with homes and an RV campground. North of Chief Lake is a scenic, secluded island, an ideal wildlife sanctuary. We then pass the resort at the southern end of World's End Road and travel back through Tyner Lake to return to the main body of the flowage's western basin.

Swinging north, we travel through Chicago Bay and Minnesota Bay to the mouth of Crane Creek. We then begin our journey up Crane Creek; watching

for beavers and eagles. Spring-fed Crane Lake is so crystalline it could be a Canadian trout lake, but it contains walleye, panfish, and maybe that world-class muskellunge. After cruising back down the Crane Creek channel and entering the flowage proper, we find the Crane Creek Island campsite, a secluded spot maintained by the DNR. About 200 yards east of this campsite is the 20-foot-wide slot that opens into Crystal Lake. This tiny lake is a gem hidden in the vast expanse of the Chippewa Flowage.

We next weave through an array of small islands and pass a public boat landing ringed by majestic pines known as CC North. Continuing east, we look south across the largest open water of the western basin. The high skyline far to the south is an east-to-west ridge, a good landmark for

boaters. We pass an open grassy area near one of the longest operating resorts on the flowage. Going south, we return to our starting point for this half of the flowage.

The interior of the western basin has numerous islands and floating bogs. Over time, seeding occurs naturally on the bogs, and some now have trees that are 40 feet tall and a foot in diameter. The bogs shift at the slightest wind; they can block navigation completely between the two halves of the flowage, and close down landings, campsites, or resorts.

We pass under Highway CC, dodging the swooping swallows nesting under the bridge, and enter the eastern basin of the flowage. Going clockwise, we pass the largest private campground on the flowage, with about 120 campsites, plus cabins and

The fishery

The Chippewa Flowage offers diverse angling opportunities for a variety of species:

Abundant	Common	Present	Rare
walleye	musky	rock bass	sturgeon
crappie	northern pike	bullheads	catfish
perch	bass	pumpkinseed	
bluegill	minnows	redhorse	
suckers	carp		

Note: A sport ice-fishing season for bluegill and perch opens this winter on the flowage for the first time in more than 50 years.

Checking the flowage's creel

The results of the 1990–92 DNR creel census on the Chippewa Flowage predict the following:

Species	Hours to Catch	Average Size
walleye	4	13"
northern pike	6	22"
musky	40	39"
bass	4	13"
crappie	½	9"
bluegill	½	7"
perch	1	9"

These figures are long-term averages. Actual results will vary by year, season, angler, weather, food conditions, and fish population cycles. However, these figures are good benchmarks. Flowage catch rates and sizes are considerably better than statewide and regional averages.

The world record musky, at 69 lb. 11 oz., was caught here by Louis Spray in the 1940s. High rates of voluntary catch-and-release fishing on the flowage has created an outstanding fishery for musky in the 20–30 lb. class. The musky fishery is supported by successful natural reproduction and supplemental stocking.

First-time musky anglers should do some research before setting out: Talk to resort owners, guides, residents and other anglers to find out what the fish are hitting, where they're generally located, at what depth, and so on.



Experience the Big Chip in different ways in each season.

(left) Relax while fall fishing in James Bay, (above) Learn kayaking from a local outfitter, like this class held near the County CC bridge.

RV hookups. This campground is also the location of "Fishing Has No Boundaries" Hayward Chapter, a three-day fishing event each May for anglers with disabilities.

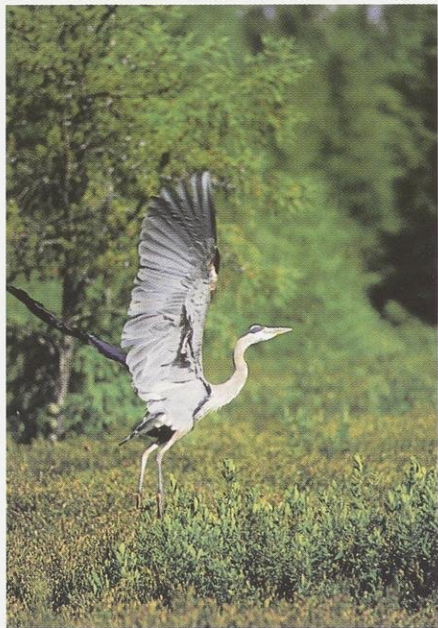
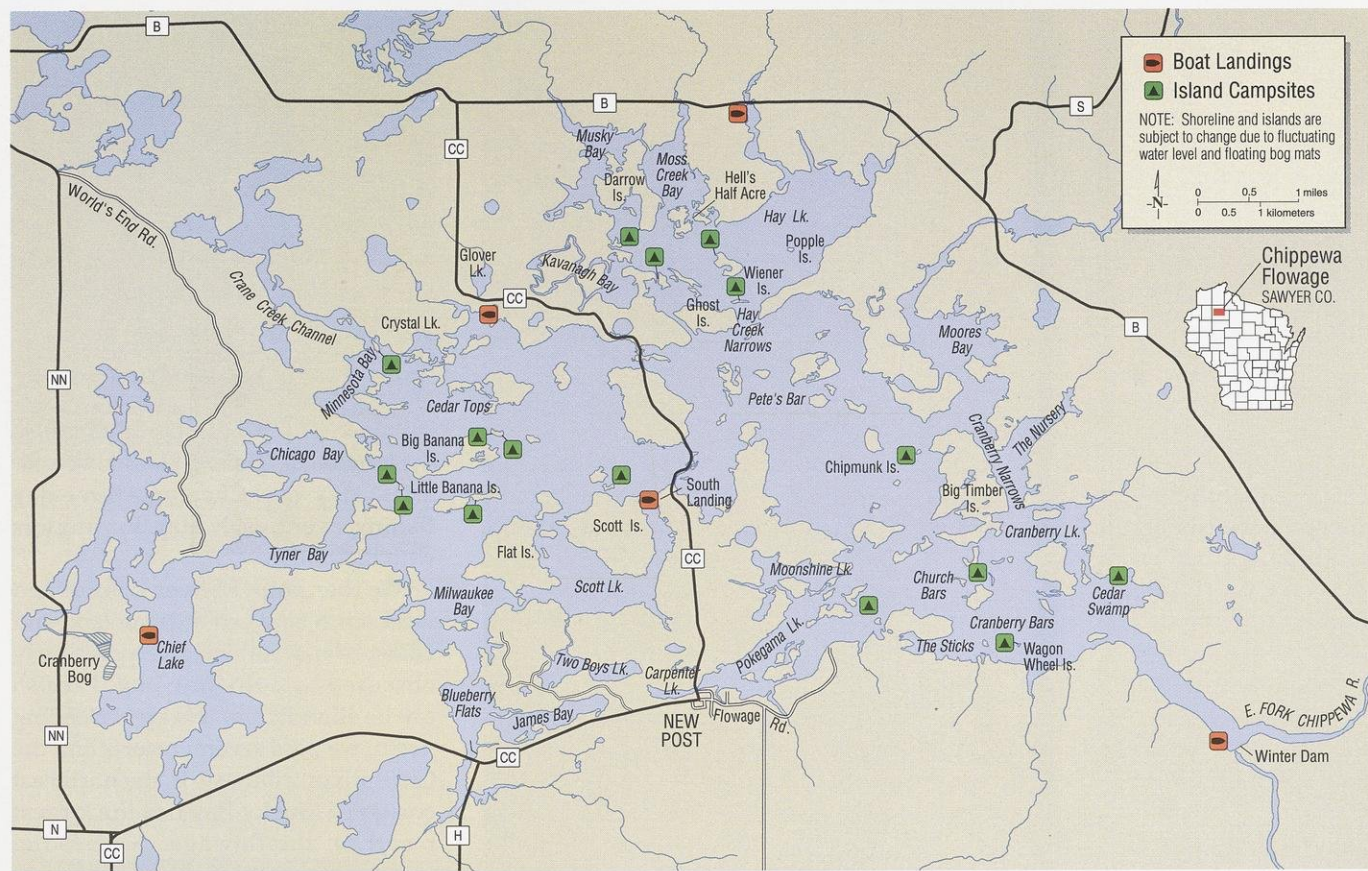
We then round Sliver's Point and head north between the mainland and Ghost Island. Kavanagh Bay is nearly obscured by a floating bog. Panfish can be abundant in this area. Heading north, we pass several resorts and the Chief River tributary. In the northeast corner of Musky Bay lies the largest resort on the flowage. A man-dug channel allows us to encircle Darrow Island, proceeding east to Moss Creek Bay — more prime musky water. Hell's Half Acre, a stumpy, shallow area aptly named due to the hazardous travel, is next.

Further east, we travel up the Hay Creek portion of the flowage to the Hay Creek boat landing, passing a magnificent resort along the way and some year-round homes. To the south and east is a large expanse of water with Popple Island marking more well-known walleye and musky water. Moving south, we pass Wiener Island campsite and head through the Hay Creek Narrows — always a good fish producer.

Proceeding east, we round a large peninsula studded with homes and resorts. This takes us into Moore's Bay and one of the main tributaries, the West Fork of the Chippewa. Tannins from decaying vegetation in the tributary streams add a brandy tint to the water. The West Fork is rocky and serpentine; stick to the channel when boating up to County Highway B.

When we reach the rapids, we're at the far reaches of the Chippewa Flow-

CHIPPEWA FLOWAGE

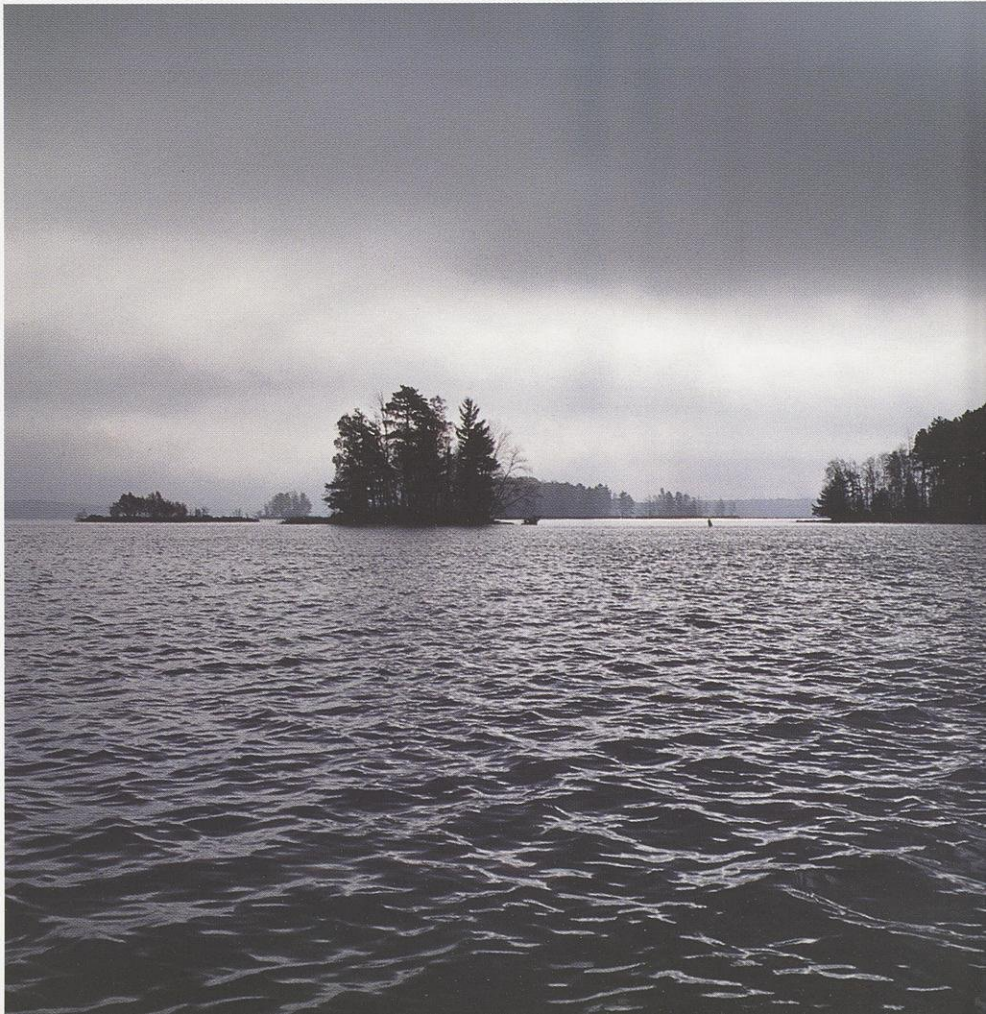


The vast 15,300-acre flowage is a wonderful place to relax, watch wildlife, fish, enjoy company and find solitude.

(top) You can't see it all on one trip or in one season. Savor the flowage one area at a time.

(above) You may see great blue herons rising from the floating bogs...

(right) or find a little peace and quiet by Popple Island.



age. Going back down the West Fork, we hug the eastern shore. The lands in this area are within the Chequamegon National Forest and are managed by the U.S. Forest Service (USFS). We see a white boathouse-cabin along the shore; back in the Roaring '20s, this was a hideout for gangsters. The deep, long bays offer ideal fishing. Here, tucked behind Big Timber Island, we find the "Nursery"—not a tree nursery, but a place for the Big Chip's muskies to grow.

Continuing south, we go through the Cranberry Lake area of the flowage—more good musky water—and then pass the island campsite known as Cedar Swamp. From here we see the long channel leading down to the East Fork of the Chippewa, and the Winter Dam. The East Fork is a rocky and hazardous area, but good for fishing.

The dam that creates the flowage is a marvel; it's amazing that a small plug like this can hold back such a sprawling mass of water. The dam construction started in 1921 and was finished in 1924. It was originally built by Northern States Power Company for flood control and to provide adequate flow during the winter. A settlement in 1984 provided for hydropower generation with the Lac Courte Oreilles Band (LCO) of the Lake Superior Chippewa; today there is a small electricity plant at the dam that provides income for the LCO.

Fishing below the dam can be excellent at times; many of the muskies adorning the walls of local businesses and homes came from this spot. Like any dam, conditions can be hazardous; obey all cautionary and regulatory signs when fishing here.

Continuing north, the bank is steep; we'll notice an opening filling in with vegetation. This is the site of an old farm that was nearly submerged by the creation of the Chippewa Flowage.

Moving back to the basin and traveling another mile brings us to the largest part of the flowage. This area, known as "Post," was the homeland of the Lac Courte Oreilles, who have lived near the headwaters of the Chippewa River since the mid-eighteenth century. The creation of the

flowage covered the village, including the church and graveyard. The village was reestablished in the area known today as New Post. There are several resorts and residences in this part.

In 1825, 1837, and 1842, many tribes of the Ojibwa Nation, including the Lac Courte Oreilles, entered into sovereign treaties with the United States, ceding vast territories of land and reserving unto themselves significant rights and privileges. Please respect tribal property, rights, and customs when you visit the flowage.

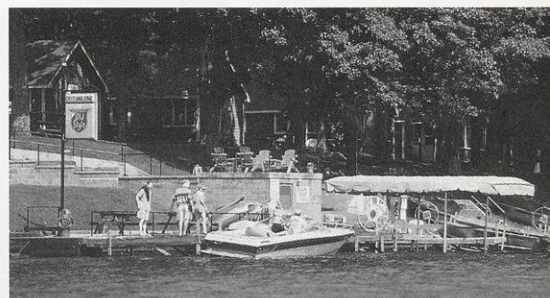
Continuing north up the old Pokegama Lake, we could swing into Moonshine Lake, a massive, 92-foot deep lake. Straight north of us is the largest expanse of open water on the flowage. "Pete's Bar," a world-renowned site for battles between man and musky, is located in the northern part of this open water. To our left is the Gold Coast, an area containing many residences. The Highway CC bridge is next, and the journey around the perimeter of the eastern basin is complete. The interior of this basin contains a multitude of islands, the largest of which is "Big Timber." The southeast portion of this basin is the most wilderness-like of any area on the flowage; the visitor can travel for miles without seeing sign of human presence, except perhaps for a few other musky hunters.

Camping on the Chippewa Flowage

Camping is allowed at no charge on a first-come, first-served basis at 16 island sites accessible by water only. You may camp at any of the existing campsites designated on this map. You MAY NOT establish new campsites. Other experiences from rustic campsites to full hook-up facilities are available at private facilities on the flowage.

When camping at state sites please follow these simple rules:

- Pack out your trash. Garbage and recycling containers are available at the boat landings.
- Be considerate of other campers. Keep noise to a minimum; leave the campsite as you found it.



Eighty percent of flowage visitors stay at the 35 or so resorts clustered on Chief Lake, near the middle along County CC and on Musky Bay. Camping is restricted to 16 remote campsites like this one on Crane Creek.

- Build fires in established fire rings only.
- Do not cut standing or dead trees for firewood. Even dead trees provide nesting and feeding sites for certain wildlife. If camper firewood is not already at the campsite, please contact resorts, campgrounds, or other local concessionaires in the area.

There is a 10-day limit on camping at all state campsites within the Chippewa Flowage. The DNR regularly checks campsites and visitors may not leave unattended camping equipment to "save" a site.

Boating on the Big Chip

The flowage's stumps, logs, floating bogs, and rock bars provide good fish and wildlife habitat, but make boating hazardous in some places. Boaters should always exercise caution, especially in unfamiliar territory.

Wisconsin's boating regulations are strictly enforced, especially "speed that is no greater than reasonable or prudent." Remember, most people come to the flowage to enjoy a peaceful, "back to nature" environment.

The four DNR-administered boat landings are being upgraded. Board-



Anglers try their luck near Church Bars, one of many musky hot spots on the flowage. Eagles fish the Big Chip, too.

ing docks are being installed to ease access for all users, including those with disabilities.

Wildlife on the flowage

The waters and the surrounding lands of the flowage offer a variety of wildlife habitat. Animals that use both water and forest habitats to find food, nest sites, or shelter do especially well along the many miles of undeveloped mainland and island shoreline.

Great blue herons, mallards, wood ducks, and hooded mergansers are common. The bald eagle, common loon, and turkey vulture are also frequently spotted. Large numbers of waterfowl use the flowage during spring and fall migration. Over 130 species of birds have been observed on the flowage or in the nearby forests.

Many mammals also find a home here. Deer, beaver, otter, mink, and raccoon are fairly common and occasionally a black bear is reported. Most of the animals found on the flowage can be observed at close range if they are



approached slowly and quietly, especially with a boat. Be particularly careful not to disturb nesting birds or animals with small young.

A flowage with a future

The Wisconsin DNR, USFS, and LCO are formulating a plan to guide the future of the Chippewa Flowage. The proposed Joint Management Plan focuses on protecting the unique natural character of the flowage, and maintaining the high quality of its nat-

ural resources and recreational opportunities. For instance, the first ice-fishing season for sport anglers in more than 50 years will open the flowage for limited bluegill and perch fishing starting December 1st.

Citizens played a valued, vital role in the plan's development by making comments and reviewing management alternatives. A volunteer citizen advisory committee continues to assist the DNR, forest service and tribe on flowage issues. Resort interests (through the Lake Chippewa Association) and the Chippewa Flowage Area Property Owners Association are also instrumental partners in flowage plans and management.

Next August, area resorts and communities will commemorate the 75th year since the flowage was formed. Come visit these magnificent waters and join the observance. □

Ray Larsen is the Chippewa Flowage Manager. For flowage information, contact him at the DNR Ranger Station, 10220N State Road 27, Hayward, WI 54843, (715) 634-6513.

is driving waterfowl from their habitat. The serenity of the waterfront property no longer exists.

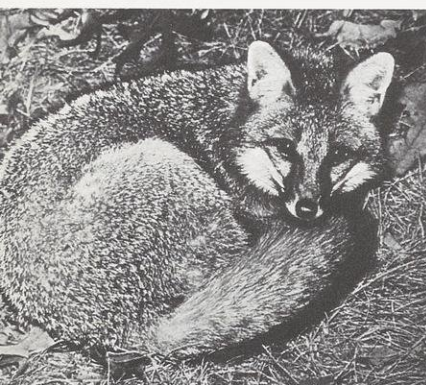
Victor Bennett
Horicon, Wis.

A REGULAR VISITOR

I read with great interest Roger Jasinski's article on the Turtle-Flambeau Flowage. Quite by fate some 11 years ago, a trip that we'd planned to the Lake of the Woods in Canada fell through. That's when a friend told me about the flowage near Mercer.

Our family has since been making one to two trips a year to this pristine and wonderfully beautiful part of Wisconsin. How lucky the state is to have such a prize and how wonderful that it's largely in public ownership! Thanks for sharing it with others.

David S. Maslowski
Blue Grass, Iowa



COURTESY OF DNR BUREAU OF WILDLIFE MANAGEMENT

SILVER FOX

Toward the end of September, we took a fall color ride in the Hayward area. The leaves were at peak, and we were busy taking pictures. We had the back roads to ourselves and saw some sandhill cranes and a huge beaver lodge. Our film was about used up when, to our amazement, a beautiful animal ran down the road near a swamp. At first we thought it was an arctic fox turning winter white, but its ears were not rounded and it had a different body shape. A few weeks later I saw a picture of this animal on an episode of *Wild*

America. What we saw was the silver color phase of a red fox.

Nature provides pleasant surprises for us if we take the time to enjoy them.

Betty Jane Effertz
Rice Lake, Wis.

LIMIT WATERCRAFT

I think your credibility suffered by co-writing an article on Jet Skis with the Personal Watercraft Industry Association ("The buzz over water bikes," June 1997). It prevented an objective look at that kind of watercraft and especially how the PWIA forces people to accept them.

It's ironic that this industry-friendly piece appeared in the same issue featuring the magnificent Turtle-Flambeau Flowage, where all the DNR can do is "advise" against Jet Ski use. Your close friends at the PWIA won't let you prohibit them. Chain saws are outlawed in the Turtle-Flambeau, why not Jet Skis?

I own two motorboats, a sailboat, and a kayak. For 30 years I have owned stock in a recreational watercraft company. I can say that Jet Skis can and should be restricted from certain waters in this state without any harm to the industry. Failure to take action on Jet Skis will reduce all the remaining serene waters of the state to the lowest standard of excessive noise.

Mark Schroeder
Prescott, Wis.

We co-wrote the article to show that the industry is aware of its reputation and is taking steps to make personal watercraft (PWC) quieter and safer. The explosive growth of interest in these craft warrants better training for PWC owners, safety lessons for PWC renters, better technology to reduce noise and sensitivity to both shoreland owners as well as other watercraft.

The DNR does not have Legislative authority to ban motors or certain classes of watercraft from the Turtle-Flambeau Flowage nor did the agency seek such authority in its management

plan. Local governments can place restrictions on waters when deemed necessary as long as the restrictions are applied equally to all craft and all water users. On the flowage, we established a "voluntary quiet area" where persons would be asked, not required, to observe slow-no-wake operation of power boats. In that area we also discourage the use of radios, TVs and generators so people can pursue quiet camping and fishing.

Limited numbers of campsites and boat landings only work to preserve a quiet, pristine experience where people collectively decide to create such experiences. We believe that the community of PWC users is becoming more sensitive to the public desire to share waterways, operate PWCs more safely and restrict hours of operation to preserve peaceful enjoyment of public resources.

NONHUNTERS SHARE THE LOAD

I was angered to read the June letter "Paying for Conservation." Apparently the outdoorsman feels that hunters and trappers are paying for amenities like parking lots and watchable wildlife signs. He feels animal rights groups and bird watchers should pay their share.

I am a bird watcher. I believe in animal rights. I fish, and every year I give money to state parks and wildlife areas to continue their continuation.

When done right, I believe hunting is beneficial to the ecosystem and to people, but when there are no rules, disaster strikes.

If people didn't have to pay for what they kill, take home and eat, the DNR would not have the money to regulate the land or enforce rules. Eventually public hunting lands would be sold to developers. Furthermore, people who don't believe in exercising self-control might kill off every living thing until man alone would not be extinct.

So be grateful for the small fee we have to pay to hunt and

fish. Be conservation wise. And be patient with the tourists whose money helps conserve the land you live on.

Kelly Gonzalez DelaRosa
Chicago Heights, Ill.

GOOD BOATING PIECES

The "On the Water" boating articles were an excellent reminder of the safe practices taught during the U.S. Power Squadron classes I took years ago. I really appreciate the opportunity to access information on the Web when I have the time.

Kent L. Langdon
Oshkosh, Wis.

KILLDEER HERE

In late June we had four killdeer hatch near our home. They were nesting in the driveway and we had been watching their progress. We got curious about them, got on the Internet and found your interesting article (April 1997, "A call from above"). The birds and their babies are no longer around. We are trying to find out if it was normal for them to leave so fast. We sure enjoyed the information you provided.

Tim Hoskin
Jackson, Mich.

WEB VISITORS

I find your site easy to use, clearly written, nice graphics and a great summary of the current issue (which I read at home). The nature photography is excellent and the maps are VERY good. I think there is enough variety to interest anyone with even a mild liking of nature. I hope to take some of your recommended field trips and especially want to bike through the Kickapoo Reserve.

Gerard R. Wolfe
Milwaukee, Wis.

I love biking in Wisconsin and Minnesota. This Web site reminds me of the great times we had last summer on the road.

Sr. Jeanine Luger
La Crosse, Wis.



HERBERT LANGE

Goin' south

It's getting to be that time of year, isn't it? When the wind has more of a bite than a nip. When the clouds assume that sullen adolescent scowl. When the trees say, "We've been holding up these leaves all summer, and we've had enough." Yes, you're thinking about packing up and sneaking off to someplace civilized, where winter is inaugurated with a slathering of SPF 40 sunblock and a pina colada on the beach.

Well, forget it. You're too late. There are others who planned for departure months and years ago; all you can do is say "hasta la vista" and watch them fly away.

Many will say you have the better end of the bargain. Wisconsin's fall bird migrations are wonderful spectacles to behold, even if you can't go along for the ride.

If you're an early riser, plan a trip to Gallagher Marsh, in the **Sandhill State Wildlife Area** near Babcock in Wood County. From mid- to late October thousands of sandhill cranes congregate here to gather strength for the long trip. Get to your perch before sunrise and you'll be treated to the raucous song-and-dance of 3,000 to 5,000 sandhills greeting the day's first light.

If it takes more than a crane to haul you out of bed that early, you can still see plenty of wildlife along Sandhill's Trumpeter Trail. This 14-mile self-guided auto tour winds through hardwood forests, meadows, oak savannas, prairies and flowages. Pause to stop at the three observation towers, where you won't have to crane your neck too far to get a panorama of the landscape and its temporary and permanent residents.

South of Sandhill, the 44,000-acre **Necedah National Wildlife Refuge** in Juneau County offers viewing points where you can see flocks of

waterfowl resting and

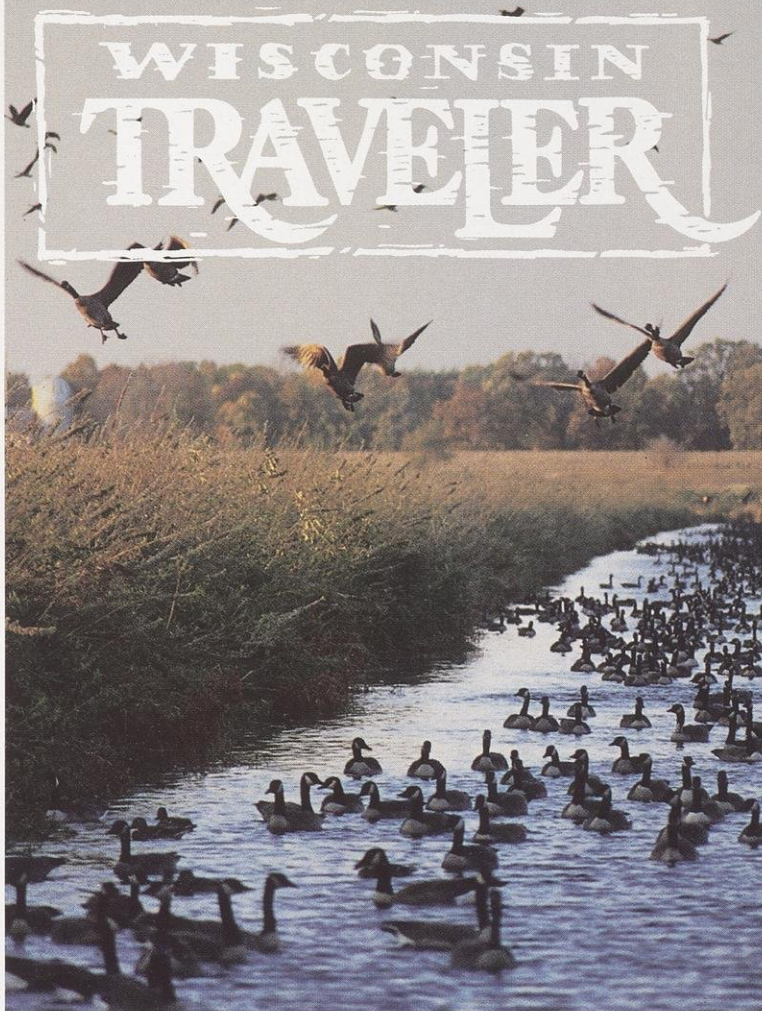
staging before their flights are called. Hiking trails weave through the refuge. Stop at the visitors' center six miles northwest of Necedah for maps and other information.

To the west, the Mississippi River guides the winged on their journeys to warmer climes. At **Rieck Lake Park** in Alma, Buf-

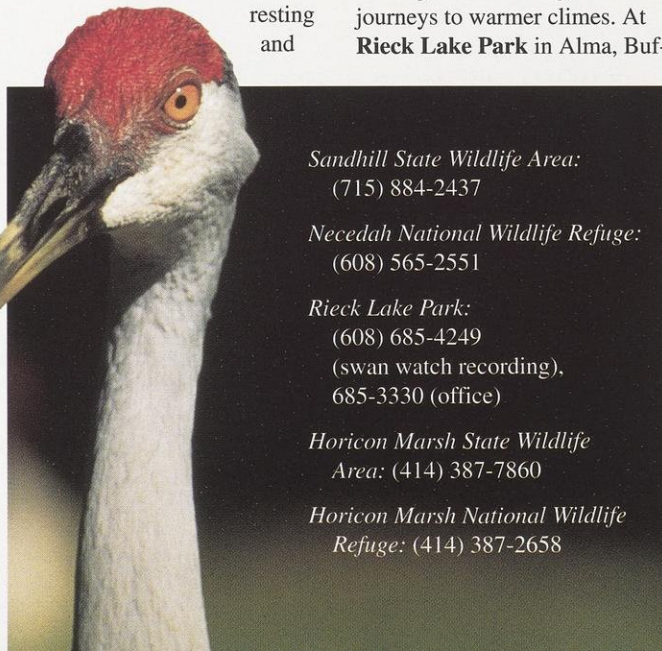
falo County, 2,500 tundra swans refresh themselves for a few weeks before moving south in early November. Look for herons, bitterns and great egrets, too.

Of course, no pass on migration would be complete without mentioning **Horicon Marsh** near Horicon, Dodge County. Thousands upon thousands of Canada geese claim this vast cattail marsh in autumn, but more than 265 other bird species also have been spotted here. A trip to Horicon is a fine way to bid fall a fond farewell.

Major flyways carry migrating birds across Wisconsin following the Mississippi River, the Wisconsin River and wetland complexes, and the Great Lakes coastlines. (top) See tundra swans mass on the mighty Miss. (above) Watch geese by the thousands at Horicon Marsh. (left) Join the sandhill cranes at daybreak midstate.



ROBERT QUEEN



Sandhill State Wildlife Area:
(715) 884-2437

Necedah National Wildlife Refuge:
(608) 565-2551

Rieck Lake Park:
(608) 685-4249
(swan watch recording),
685-3330 (office)

Horicon Marsh State Wildlife Area: (414) 387-7860

Horicon Marsh National Wildlife Refuge: (414) 387-2658

WAYNE NELSON

Wisconsin, naturally

MISCAUNO CEDAR SWAMP STATE NATURAL AREA

Notable: A 555-acre northern wet-mesic conifer forest of white cedar, balsam fir and black fir along the south branch of Miscauno Creek. The forest floor is carpeted with mosses, lichens, ferns and fungi.

Peak time to visit: Any time! Beautiful in fall when deciduous trees contrast with the green conifers and mosses. Look for warblers, orchids and other wildflowers in spring and summer.

How to get there: Marinette County. From the junction of highways 8 and 141 just south of Pembine, head south on 141 for 2.3 miles to County Highway Z, then east on Z 1.6 miles to an access lane on the south. Go south on the lane for $\frac{1}{4}$ -mile to the site. Gazetteer: p. 99, grid C7.

